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Bulletin 55

ARCHEOLOGY 7

METALLIC IMPLEMENTS

OF THE

NEW YORK INDIANS

BY

WILLIAM M. BEAUCHAMP S.T.D.

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Bulletin 55

METALLIC IMPLEMENTS

OF THE

NEW YORK INDIANS

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METALLIC IMPLEMENTS OF THE NEW YORK INDIANS

The stone and bronze ages of Europe have little reference to America except in a very broad sense. Using stone implements here from the earliest times to the present day, men may have used copper also in New York when the whites came, as some others had done centuries before. There had been a time when durable or massive implements were made of this. Customs changed. The later New York aborigines knew little or nothing of these implements, and others employed the material only in an ornamental or reverential way. The earlier nations did not despise this use, and well wrought articles for personal adornment are found in many parts of the United States and Canada. South of our national limits beautiful early articles of silver and gold occur. Recent metallic ornaments are frequent in New York, but none have been reported of native copper except beads.

Most of the early discoverers had something to say of copper ornaments, but these may not have been of native metal in all cases. When the Cabots landed at Newfoundland or Nova Scotia in June 1497, they observed that "the inhabitants had plenty of copper," probably the native metal. When Verrazano visited the coast of New England in 1524, he saw many articles of wrought copper, highly esteemed for their color and beauty. The source of these may be doubtful. Cartier found no copper among the Iroquois of Montreal on his visit there in 1535, but heard of it. "They took the chayne of our capitaines whistle, which was of silver, and the dagger-haft of one our fellow mariners, hanging on his side being of yellow copper guilt, and showed us that such stuffe came from the said river. . . Our capitaine shewed them redde copper, which in their language they call Caquedaze, and looking towarde that countrey, with signes asked him if any came from thence, they shaking their heads answered no; but they shewed us that it came from Saguenay, and that lyeth cleane contrary to the other."—*Dawson*, p. 37

There may have been misunderstandings on both sides, but the plain statement is that this people knew copper and had a name for it, though they had none themselves. When Bartholomew Gosnold was at Cape Cod in 1602 he saw a young Indian with plates of copper hanging from his ears. These may have come from European contact, but Gosnold did not suggest this. Farther south they were visited by natives, one of whom wore a copper plate, a foot long and half as broad, on his breast. Others had copper pendants in their ears. John Brereton added to this, accounts of their beads, chains, arrows and other things, and said that not one lacked something of the kind. Another described pipes partly of copper, much as Hudson did in New York a few years later. Belknap says of these statements:

> All these Indians had ornaments of copper. When the adventurers asked them, by signs, whence they obtained this metal, one of them made answer by digging a hole in the ground and pointing to the main; from which circumstance it was understood that the adjacent country contained mines of copper. In the course of almost two centuries no copper has been discovered; though iron, a much more useful metal, wholly unknown to the natives, is found in great plenty. The question, whence did they obtain copper? is yet without an answer.—*Belknap*, p. 151

To this it may be said that the arrows, tubes, belts and pipes of copper, as described by Brereton, are all represented on recent Iroquois sites, and may fairly be considered as European articles, furnished by some unknown early trader.

When it is said that Henry Hudson saw "copper tobacco pipes" among the Indians of New York bay, he may have mistaken those of bright red clay for this metal, or they may have come from the same unknown trader. They were not afterward mentioned by any one, and none of native metal have ever been found. The natives could not have cast them, and it would have been extremely difficult to make them by hammering. The copper ornaments seen in this voyage may have had the same source. The brass pipes which Roger Williams thought the Narragansetts made may well be classed with these. They are never mentioned inland, and this affects the question of origin,

but every article described above was in use by the Iroquois in the 17th century. The arrowheads of 1602 are said to be "much like our broad arrowheads, very workmanly done," and brass arrowheads are spoken of by others.

Native copper articles are rare along the New York seacoast and in our mounds, and perhaps are found more rarely still on camp sites. They seem to have been lost in travel. Apparently implements of native copper have not been made in the interior of New York within 400 or 500 years. This conjecture may be changed at any time, though well founded now. The Iroquois of Montreal knew of this metal in 1535, but had none. The Atlantic coast Indians were then more fortunate, either having European or home sources of supply, or communication with the Lake Superior mines, from which the Iroquois proper were cut off. Both these things are probably true.

For the last we may remember that the larger part of the Huron-Iroquois family were somewhat isolated, the Algonquins surrounding them and for a long time keeping some of them under. No members of the Iroquois family lived west of Lake Huron, but their foes did. So they told Cartier that in the country of metals "there be Agojudas, that is as much to say, an evill people, who goe all armed even to their fingers' ends." These wore the aboriginal armor and were continually at war. The Iroquois were then unwarlike and commanded no access to the mines.

The question of a home supply merits attention. Copper occurs in mines, but so it does in scattered fragments. There are even unprofitable copper ores in New York, but no ledges of this metal. Nodules of several pounds weight have been found in Connecticut and New Jersey, and some may have been used and prized by the aborigines near the coast. Farther north there is little doubt that all articles came from Lake Superior at an early day, and they have such marked peculiarities as to make it probable that they were commonly wrought into shape in that vicinity. Occasional rude pieces found in New York also show this was not always the case.

Soon after Quebec was founded Champlain mentioned a piece of very handsome and pure copper given him by an Algonquin. It was a foot long. The great discoverer said, "He gave me to understand that there were large quantities where he had taken this, which was on the banks of a river, near a great lake. He said that they gathered it in lumps, and having melted it, spread it in sheets, smoothing it with stones."—*Champlain*, 2:236

Presumably this refers to Lake Superior, and the melting merely to softening the metal by heat. The statement lacks precision in these ways, but it would have been possible for an eastern Algonquin while in alliance or friendship with the Hurons to reach Lake Superior.

A succeeding statement is more precise. Radisson wintered in 1658 on the shore of that great lake, and mentioned the native copper several times. He seems to refer to ornamental forms when he speaks of a "yellow waire that they make with copper, made like a starr or a half-moon."—*Radisson*, p. 188, 212. This would bring the making of native copper ornaments far within the historic period, but there is no notice of implements. In the same year occurred the visit which brought Lake Superior copper plainly to view. This was made by an Algonquin chief living on the Saguenay, who had passed 10 years in the country of the Nipisiriniens, and whose name was Awatanik. Thence he went to Lake Superior in 1658, spending the following winter there. Two Frenchmen returned from this lake in 1660 with 300 Algonquins, but they said nothing about copper, though they had wintered there also.

The first definite Jesuit report of Lake Superior ore is in the *Relation* of 1660. In that year a French missionary met the Algonquin mentioned, just returned from that region, where he had gone in 1658. He found there "copper so excellent that it is found fully refined, in pieces as large as the fist." The inference is that the Indians east of Michigan had little knowledge of this before. The *Relation* of 1667 contains the journey of Father Claude Allouez to Lake Superior in 1665. He reached the lake September 2, and went on to say:

The savages respect this lake as a divinity, and sacrifice to it . . . They often find at the bottom of the water, pieces of pure copper, weighing from 10 to 20 pounds. I have seen these many times in the hands of the savages, and as they are superstitious, they regard them as so many divinities, or as presents that the gods who are at the bottom of the water have made them to be the cause of their good fortune; it is for this that they keep these pieces of copper wrapped up among their most precious movables; there are some who have preserved them more than 50 years; others have had them in their families from time immemorial, and cherish them as household gods.

The truth seems to be that the interior aborigines had ceased to use native copper implements more than 300 years ago, some resuming their use at a much later day. Where native copper was known it had become almost sacred, not to be used in common ways. Farther east it was little known, occurring on no village sites in New York, and rarely in camps.

The missionary did not then see the great copper rock projecting from the water, of which he had been told, but later travelers did. He recorded the fact that passers-by cut pieces from this. This is described in the *Relation* of 1670. "Advancing to the end of the lake, and returning a day's journey along the southern side, one sees at the water's edge a rock of copper which weighs at least seven or eight hundred pounds, so hard that steel will scarcely penetrate it. When however it is heated, it is cut like lead."

There are many other mentions of plates and masses of copper seen, but these need not be quoted here. One other quotation will be made to show the sacred character that it had gained, after having had common uses. This is from the same *Relation:*

At that time the savages told a story of a floating island which approached or receded with the wind. Four men reached this one day and prepared their dinner in their usual way. Heating the stones they found and casting them into the water to make it boil, they discovered that they were copper and that this lay plentifully around. After eating they loaded their canoe with pieces and plates of the metal and were soon homeward bound. They had not gone far when a great voice called to them, asking why they carried off the cradles and the diversions of his children. "The plates of copper are the cradles, because among the savages they are made of only one or two boards joined together, on

which they lay down their children; and these little bits of copper which they were carrying away, are the playthings and diversions of savage children, who play together with little stones." One said it was the Thunder spoke; one the god Missibizi; another the water men. Two Indians died on the way home, the others soon after, and no one dared visit the floating island again.

A friend of the writer, the late Dr P. R. Hoy, of Racine Wis. published two papers in 1886 on the important questions, *How and by whom were the copper implements made?* The first paper he read in 1876, the second in 1882. That they were not cast he showed, because the aborigines could not produce the heat required, but copper could be softened by judicious applications of heat and cold. He thought that implements were hammered or pressed into shape in stone molds, and made successful experiments. Lastly, he thought most native copper articles were made after the white men came, a conclusion not so easily proved. His arguments will not be reproduced here, but some of his facts will be mentioned.

Copper articles were made near Lake Superior for export and trade elsewhere. In 1882 there were found 26 copper implements close together, under a small pile of stones at the Sault Ste Marie. In the lot were six awls from 3 to 6 inches long, five knives of various sizes, and 16 axes, hammers and chisels. These must have been made for trade. For recent use he cites witnesses to the copper implements used by the modern Chippewas and Winnebagoes. One Indian agent certified that when he first came among the latter, "many of them carried lances headed with copper, and it was quite common to see arrows headed with copper." These points may have been like those used by the Iroquois 250 years ago. Out of over a hundred mounds opened near Racine none contained copper. Among hundreds of native copper implements in the Perkins collection not one came from a mound. This led him to conclude that such articles were later than the mound builders.

Great quantities of native copper-ornaments have been found in Ohio mounds. Mr Warren K. Moorehead took three or four thousand spool-shaped ornaments out of the Hopewell mounds

alone. These are properly mound articles, thus far unknown in New York. He found there many articles of sheet copper, sometimes stamped or ornamented, naturally suggesting recent material but clearly aboriginal. It is definitely known that native copper was beaten thin enough for turning the edges under and overlaying prepared forms. Out of one of these mounds Mr Moorehead took a copper ax 22 inches long and 6 inches wide. This weighed nearly 38 pounds, not quite seven times as heavy as the largest New York implements of this kind.—*Moorehead*, p. 325

Wisconsin naturally affords the greatest supply, being near the ancient mines. Mr F. S. Perkins sold 143 local copper implements to the Wisconsin historical society, and in 1886 had another collection of over 600 exclusive of beads. The Hamilton collection is also notable, containing most New York forms, as well as small fishhooks and unusual ornaments. The University of Pennsylvania has 560 articles gathered from a space of 5 acres in Wisconsin. The writer met with a curious Wisconsin collection at Manitou Col. The articles were flat and symmetric, cut from rolled or beaten copper and showing none of the irregularities of early implements. Some found at Brewerton N. Y. are suggestive of these. Native copper articles occur in Michigan and Minnesota. In the latter they are well distributed and include eastern forms but are not numerous. Canadian implements are nearly related to those of New York, and the shores of Lake Ontario and the St Lawrence have afforded many. Others occur on both sides of Lake Champlain.

New England is fairly represented and has some notable forms. Pennsylvania has a number of implements and ornaments. Dr C. C. Abbott knew of 128 copper articles in New Jersey in 1885, but they were not all fully wrought. They included 11 celts, five spears, eight arrowheads, 13 bracelets, 70 beads and 21 pieces of copper. At one time he had thought it "not improbable that all the copper articles found along the Atlantic coast were brought from western localities. A careful resurvey of many localities where ordinary Indian stone implements occur in

abundance, and correspondence with collectors in various parts of New Jersey and eastern Pennsylvania now convince me that the use of copper, as implements and ornaments, was much more common than I supposed, and that among the Delaware Indians were many coppersmiths." He cites examples of articles which he thought were made of New Jersey copper, this not being rare. One mass in Somerset county weighed 100 pounds, and it also occurred in the eastern counties of Pennsylvania. Finished ornaments were found in graves with others unfinished, and in one grave was a copper nodule of 13 ounces. His final opinion is thus expressed:

> It would appear, then, from an examination of the copper objects found in Pennsylvania and New Jersey, that the weight of probability is strongly in favor of their home manufacture; and the similarity of the forms to those taken from areas where mounds occur is another fact in favor of the rapidly growing impression that the builders of these earthworks and the Indians of the coast were essentially one people.—*Abbott*, p. 774-78

Dr Abbott's statements are weighty, but there are other facts which may prevent their full acceptance. No argument will be held on these now, one important fact clearly appearing, that there were supplies of native copper accessible to the coast Indians which were not available to those in the interior of New York.

Mr David Boyle remarks that copper articles are comparatively rare in the province of Ontario and that the line of distribution seems to be through the Georgian bay and along the Ottawa river. Few have been reported in the Neutral country, lying near the north shore of Lake Erie. As a matter of fact the Toronto collection has many fine examples of early and recent forms. The latter are not so frequent as in New York, owing to the overthrow of the Huron, Neutral and Tobacco nations in the middle of the 17th century. The country was depopulated just as these were beginning to be most freely used. Those of native copper have a few forms not reported in New York. Some fine articles come from Wolfe island, opposite Cape Vincent. As this lies nearer the New York mainland than that of Canada,

these might well be described and illustrated as New York specimens. Those found in the mound at Brockville are merely separated from the New York shore by the St Lawrence, and are like those found elsewhere in the state.

The collection of Mr A. E. Douglass, of New York city, includes 78 copper objects, mainly from Ohio. He does not state how many are of native copper, but divides them into spears, celts, knives, hammers, vessels, beads in lots, bracelets, implements, ornaments, tubes, pipes, arrows and grooved axes. Of these one arrow, one implement, two bracelets and six ornaments are from New York. Nearly half are from Ohio.

Prof. George H. Perkins has described and figured some of the native copper implements of Vermont and Dr Abbott has illustrated a celt from Maine. Some copper articles have been found in Manitoba, but these do not essentially differ from those farther east. Excepting a small space in Ohio distinguished by quite remarkable articles, there is thus a very large district in which nearly all native copper relics are practically of the same types.

It must be remembered that the occurrence of these in the territories of historic nations is no evidence that they were made by them. They are scattered all through the territory of the Iroquois family, but are not found on the village sites of that people, early or late. The presumption is that they were made by an earlier people still. They are found in the land of the Lenape, but we must connect them with known villages of that people before we can assert they were made by them. As far as evidence goes, in the eastern states they were usually lost by the wayside or in temporary camps, or else were buried with the dead. An observation by Dr D. S. Kellogg on those of Lake Champlain is worthy of attention. "Of copper spearheads, hatchets and gouges about two dozen have been found. These have been entirely surface or field finds. Not a single copper relic has as yet (1887) been obtained from a dwelling site." This is not invariable elsewhere, but is a general rule having importance. In New York, at least, all native copper articles may be safely called prehistoric.

As copper was prized for ornamental purposes from the beginning it seems to have been a very acceptable gift from early voyagers. Any metallic ornament would not only be prized but preserved, and there is good reason to suppose that such things, given to the Iroquois of Hochelaga and other places by Cartier or his men, were afterward brought to New York. This will appear in its proper place.

When trade with the Dutch and French opened more fully in the early part of the 17th century, metallic implements and ornaments were in great request. One has only to look over old bills of supplies and purchases to see how great was their quantity and variety. For ornamental purposes bronze, brass and nearly pure copper long had sway. About the beginning of the 18th century silver began to take its place, and for 150 years held its own as the fashionable material. Loskiel spoke of this. "The rich adorn their heads with a number of silver trinkets of considerable weight. This mode of finery is not so common among the Delawares as the Iroquois, who, by studying dress and ornament more than any other Indian nation, are allowed to dictate the fashion to the rest."—*Loskiel*, p. 52

A great number of forms became common, and all were lavishly used. Some were very beautiful and were tastefully employed. At first they were made by the whites, but the Iroquois soon learned the art and had their own smiths in every village. Such ornaments were abundant till the civil war, when the high price of silver brought many to the smelting pot. It is difficult to obtain even the smaller ornaments now.

Prof. Cyrus Thomas has wisely called attention to the large supply of copper furnished to the coast Indians by early explorers and colonists, and to the use made of it. He says:

A careful examination of the copper articles found in the mounds should lead any one, not swayed by some preconceived notion, to the conclusion that many of them were made of copper brought over to America by Europeans, which would as a matter of course indicate (if they do not pertain to intrusive burials) that the mounds in which such specimens are found were erected subsequent to the discovery by Columbus. The

copper articles found in the mounds and ancient graves belong, as may be readily seen by those who will inspect them, to two usually very distinct classes; those of the one class evidently hammered out with rude stone implements; those of the other class showing as plainly that they have been made from quite thin, smooth, and even sheets.—*Thomas*, p. 710

He has no doubt that some important mounds were made in quite recent times, and cites many early authorities to show how great a supply of metals was afforded to the Indians by European explorers, traders and colonists. In Virginia they were lavish with copper, and Smith said that in a short time goods "could not be had for a pound of copper which before was sold us for an ounce."—*Smith*, 1: 166. Strachey said that Powhatan wished to monopolize the copper trade:

Whereas the English are now content to receive in exchange a few measures of corn for a great deal of that mettell (valuing yt according to the extreme price yt bears with them, not to the estymacion yt hath with us), Powhatan doth again vend some small quantity thereof to his neighbor nations for one hundred tyme the value, reserving, notwithstanding, for himself a plentiful quantity to leavy men withal when he shall find cause to use them against us, for the before-remembered weroance of Paspageh did once wage fourteen or fifteen weroances to assist him in the attempt upon the fort of Jamestowne, for one copper plate promised to each weroance.—*Strachey*, p. 103

It appears that Powhatan had articles or pieces of native copper, but they were not abundant nor as beautiful as those of the English, and so he coveted these. Capt. John Smith often referred to this trade in copper and iron, but his most important statement was in connection with his visit to the Tockwoghes in 1608. These lived far up Chesapeake bay, and were at war with the Massawomeks, a branch of the Iroquois family, and probably a part of the Eries. The Susquehannas were friends of the Tockwoghes, and of the latter he said: "We saw among these people many knives, hatchets, and pieces of brass, which they said they had from the Sasquesahanocks, a mighty people, and mortal enemies to the Massawomeks." He elsewhere describes his visit with the Susquehannas, adding that, "many descriptions and discourses they made us of Atquanahucke,

Massawomekes, and other people, signifying they inhabit the river of Cannida, and from the French to have their hatchets and such like tools by trade."

The Virginia Indians told him that this hostile people lived "on a great salt water, which by all likelihood is some part of Commada, some great lake, or some inlet, or some sea that falleth into the South Sea." In his well known account of his battle on Lake Champlain in 1609, the great French explorer observed that the Mohawks had axes of iron, though that year included his own first visit to New York and the first Dutch voyage up the Hudson river. He said: "The Iroquois repaired on shore, and arranged all their canoes, the one beside the other, and began to hew down trees with villainous axes, which they sometimes got in war, and others of stone, and fortified themselves very securely." We are thus not to limit the possible use of European metallic articles in New York to the year 1609. It is every way probable that a few implements or ornaments reached the interior many years before, and in some instances these may have been found.

Attention has elsewhere been called to early wrecks along the Atlantic coast, whence some metal was obtained. More of these occurred than ever were reported. Fishermen from Europe haunted the mouth of the St Lawrence and the points and islands adjacent but did not publish their voyages. They were not exploring, but getting a living. In a similar way, at a later day, there were French and Dutch traders penetrating the wilds of New York, of whose names and adventures we are equally ignorant. For their own profit they said as little as possible.

It is somewhat surprising to see how rapidly our knowledge of the early use of copper has grown. Squier and Davis brought to light many copper ornaments and articles in their mound explorations, the report of which was published in 1848. The report of Foster and Whitney on the Lake Superior district, published in 1850, showed something of the early work done there. Schoolcraft was at his best in that region. Lapham

added much in writing on the antiquities of Wisconsin in 1855. Col. Whittlesey published his account of ancient mining on Lake Superior in 1863, yet Dr Charles Rau said, in his paper entitled *Ancient aboriginal trade in North America:* "The Smithsonian institution has been receiving for years Indian antiquities from all parts of North America, yet possessed in 1870 only seven copper objects: namely, three spearheads, two small rods, a semilunar knife with convex cutting edge, and an ax of good shape."—*Rau. Aborig.* p. 94. There are more there now, and yet but few compared with some private collections.

The Lake Superior copper sometimes contains small masses of native silver. Where this is present the source of the supply may be known but its absence is no test. Most articles show raised spots and lines, retaining a hammered appearance. The softer metal between is corroded. The stone hammers and rude wooden tools of the early miners are yet found where they worked centuries ago. Col. Whittlesey thought 500 years had passed since that time; Mr Lapham allowed a much more recent period. It will be seen that the Jesuit *Relations* speak of work done there in the latter half of the 17th century. While it is probable that many implements were made in adjacent districts, it is perfectly clear that masses of metal were carried away to be cut up and wrought elsewhere. Such blocks have been found and the Jesuits mention those that they had seen or owned.

In common with others the writer at first could hardly resist the belief that the early copper articles brought to him were cast in a rude matrix of sand. Much of the surface appears like a rough casting, and the longitudinal raised lines could be attributed to cracks in the mold. Dr Hoy thought the metal was subjected to a great pressure in a matrix of stone. The prevalent opinion now is that all our implements of this kind were hammered into shape. One surface is usually flat but the reverse quite commonly has a central and longitudinal ridge. On this surface the workman hammered along one side and then changed ends to hammer the other, the slightly oblique

blows producing a central ridge. Dr Thomas Wilson, of the Smithsonian institution, told the writer of his experiments in such forging, and gave a high rank to the aboriginal workman. He found peculiar difficulties in bending over the lower edges to form the socket. This feature appears in some European bronzes locally termed winged celts. Some New York articles show greater skill than any copper celts in Washington.

The Indians, however, soon learned to cast metals, if reports are true. Roger Williams said of those in New England: "They have an excellent Art to cast our Pewter and Brasse into very neate and artificiall Pipes." Such pipes were found in New York, but melting brass has difficulties, and such a native art may be doubted. Metal was sometimes used for lining pipes, both of horn and stone, and there are other examples where stone and metals were otherwise combined. All these are recent.

The distribution of early copper articles in New York is somewhat uniform on the whole, excluding the lower Hudson and Long Island. Cattaraugus and Chautauqua counties have some reputation in this way but the rather indefinite reports seem exaggerated. A good antiquarian says that in 50 years residence he has seen but one native copper arrowhead there. Onondaga county and the drainage of the Genesee river have afforded many. Fine examples have come from Jefferson county and the islands of the St Lawrence. Lake Champlain and the upper waters of the Hudson are well represented by these early relics. Some have been found on the Susquehanna.

It seems certain that the Iroquois had no metallic articles which they did not have from the whites. These they gladly adopted and the advent of the Dutch became a new era in their life. All Europeans were termed by them *Ascronni*, Makers of axes, but this was specifically the name of the Dutch. This was the definition of Father Bruyas, an excellent authority. Megapolensis interpreted it differently: "They call us *Assyrconi*, that is Cloth-Makers, or *Charistooni*, that is Iron-Workers, because our People first brought Cloth and Iron among them."—

Hazard, p. 517. It seems better to make the word mean Knife-makers than to refer it to axes. Axe is *atoko*. In the old Mohawk *assire* was cloth, and *assere* knives, so that either definition would stand as given by Megapolensis.

Loskiel said, "Many of the Delawares and Iroquois have learned to make very good rifle-barrels of common fowling-pieces, and keep them likewise in good repair." They also learned to make silver ornaments from coin, and even to insert colored glass when desired.

Native copper articles

It will be seen that articles of native copper stand distinctly apart from all others, and should be considered by themselves. With slight exceptions those of New York have a useful character, and were probably all made before the close of the 15th century. Some found on early Huron sites in Canada may have had a more recent date and some may well have been known to the later Hurons, reaching them through western trade. The form suggesting our case knife has been thought to show a knowledge of European art, but specimens of this are rare both in Canada and New York. The copper hooks of Wisconsin imply the same, but no early examples of these have appeared here.

One fact must be borne in mind in speaking of the scarcity of any early metallic articles. In early pioneer days in New York recent Iroquois village sites were prized sources of supply for iron and brass. Reference to this will be made later. Native copper articles have proved useful or salable, and many a one has gone into the crucible. Some of the finest figured by the writer have been barely rescued from such a fate, and others lay for years in the farmer's tool chest, serving some rude end. The present scarcity is therefore no absolute test of former numbers, though they were probably small. This is partly inferred from the opening of new sites, where other articles abound. Those found seem to have belonged to transient visitors and not to a settled people.

A large proportion of these remarkable articles have the celt or chisel form, usually narrower at one end than the other, but sometimes with the edges parallel. The finest brought to the writer's attention was once owned by the late J. S. Twining, who sold it to some one outside the state. Fig. 61 is reduced one half in length from the outline furnished by Mr Twining, the full length being $14\frac{3}{4}$ inches and the breadth $1\frac{7}{8}$ inches. The greatest thickness of the lateral edge is $\frac{5}{8}$ of an inch, the total thickness being about double this. It weighs $5\frac{1}{2}$ pounds. One surface is flat, and the other ridged as usual. The ends are thinner than the center but one is beveled to a sharp cutting edge. It was plowed up by Mr Farnham at Oxford N. Y. in 1856, and Mr Twining bought it of his heirs. It is to be regretted that this unusually fine article did not remain here.

Fig. 7 is a reduced drawing of another copper celt, almost the counterpart of the preceding except in size. Its weight is 2 pounds, 14 ounces, or a little more than half that of the last, but it is but about a fifth shorter. This implement is slightly beveled in thickness toward each end, one of these having a dull chisel edge. It is $11\frac{1}{2}$ inches long, $1\frac{9}{16}$ broad and $\frac{13}{16}$ thick, being a little wider at the cutting edge where it suddenly and slightly expands. One surface is nearly flat but a little depressed along the center; the other ridged as usual but slightly hollowed on each side of the central line of the ridge. This is a common feature. There are the usual flattened rough lines, showing traces of the hammer. The first owner cut the upper corner to test the material, a very frequent practice. This fine celt was found in May 1880 by Mr J. F. Shultz on lot 22, town of Clay N. Y. and was at first sold for old copper, but soon came into the Bigelow collection, where it may now be seen.

Fig. 3 is of the same general form and is much reduced. It is ridged on one side but is narrower at one end than at the other. This is in the Smithsonian institution where it is credited to Keeseville N. Y. Dr D. S. Kellogg locates it more exactly at Auger pond, Keeseville, where it was found many years ago by a Mr Hackstaff. It is $9\frac{7}{8}$ inches long and has a medial width of $1\frac{1}{2}$ inches, being somewhat smaller than the last.

Fig. 5 is also reduced, and the lateral edges gradually contract. It is $7\frac{1}{8}$ inches long with a medial width of $1\frac{3}{8}$ inches. The cutting edge extends to a central point and the bevel to the ridge commences almost at the flat surface, which is the one shown. The first owner unfortunately filed down most of the rough ridges on one side of the back. It was found on the farm of B. C. Case, north of Lake Neatawantha and toward Oswego river, near Oswego Falls. It is now in the Bigelow collection. The bevel at the point is more abrupt than usual.

Fig. 9 is another fine celt in the same collection, which embraces a large proportion of the native copper articles illustrated here. It was found by Mr Charles Woods on his farm, about 3 miles due east of Baldwinsville N. Y. lot 82, Lysander. This was in April 1878. The hard ridges are black, appearing mostly on the flat side, where a narrow central one extends from end to end. The under surface is ridged as usual and it is somewhat pointed at both ends, the cutting edge being almost rectangular in the center. The extreme length is nearly 7 inches, the greatest width $1\frac{1}{2}$ inches and the thickness $\frac{1}{2}$ inch. Below the center the sides are nearly parallel as far as the cutting edge and most of the small ridges are toward that end.

Fig. 10 was in the collection of Mr Albert Hopkins of Phoenix, but its present abode is unknown. It was found in Oswego county in 1878 and has undergone some filing, without seriously affecting its character. On the flat surface represented the hard, longitudinal ridges are unchanged. The expanded and rounded edge on this side is slightly hollowed like a shallow gouge. The back is rounded, not distinctly ridged. The extreme length is $5\frac{3}{4}$ inches, medial width 1 inch, width of edge $1\frac{5}{16}$ inches and thickness $\frac{3}{8}$ inch.

Fig. 53 is a parallel edged copper celt in the collection of Mr John Martin, Plattsburg N. Y. It was found on the Jones farm 2 miles north of that place. The surface is beveled toward each end, moderately sharpened at one, and is weathered and green. It weighs $7\frac{1}{2}$ ounces. The owner says: "One end was pounded by a hammer, which shows that one end was lapped."

Fig. 39 has also parallel edges and is quite broad for its length. It is in A. H. Waterbury's collection, and was found between Bridgeport and Oneida lake. The length is $4\frac{5}{8}$ inches and the average width $1\frac{3}{8}$ inches. The edge is rounded and slightly expanded.

Fig. 40 is still wider in proportion and suggests an ax. It belongs to Mr Albert Rose of Manchester Center, Ontario co. N. Y. and was found on the Rose farm, a little over a mile north of the old ford at Canandaigua outlet. Mr Irving W. Coats made the drawing in 1892. He says it is of native copper and is 3 inches long. The extreme breadth is $1\frac{5}{8}$ inches, being a little less at the head where there is a rounded depression. The cutting edge is curved, as usual.

Fig. 23 has the modern ax form and came from Livingston county, N. Y. It is of native copper but has unfortunately been ground down. This is in the Smithsonian collection and is of actual size.

Fig. 60 is taken from Squier's *Antiquities of the state of New York* (p. 122) and is here of actual size. He said:

One of the most interesting relics which has yet been discovered in the state, is an ax of *cast copper*, of which fig. 25 is a reduced engraving. The original is 4 inches long by $2\frac{1}{2}$ broad on the edge, and corresponds in shape with some of those of wrought native copper, which have been found in the mounds of Ohio. From the granulations of the surface it appears to have been cast in sand. There is no evidence of its having been used for any purpose. Its history, beyond that it was plowed up somewhere in the vicinity of Auburn, Cayuga county, is unknown. No opportunity has yet been afforded of analyzing any portion, so as to determine whether it has an intermixture of other metals. It appears to be pure copper. An inspection serves to satisfy the inquirer that it is of aboriginal origin; but the questions when and by whom made, are beyond our ability to answer. There is no evidence that the mound builders understood the smelting of metals; on the contrary, there is every reason to believe that they obtained their entire supply in a native state, and worked it cold. The Portuguese chronicler of Soto's expedition into Florida, mentions copper hatchets, and rather vaguely refers to a "smelting of copper," in a country which he did not visit, far to the northward, called "Chisca." The Mexicans and Peruvians made

hatchets of copper alloyed with tin. It would seem that this hatchet was obtained from that direction, or made by some Indian artisan after intercourse with the whites had instructed him in the art of working metals. At present it is prudent to say that the discovery of this relic is an anomalous fact, which investigators should only bear in mind, without venturing to make it the basis of deductions or inferences of any kind.

Mr Squier was one of the most accurate and judicious of writers and these words may have held in check the extravagant surmises and theories in which some of his contemporaries indulged. At the same time some of our best authorities have determined that many articles which appear to have been cast were really brought into shape by hammering. The first impressions are of a rude casting.

Dr Charles Rau at first allowed the casting of this article.—*Rau*, p. 92. In collecting his papers in 1882 he made a prefatory note as follows:

Reference is made to a *cast* copper ax plowed up near Auburn, Cayuga co. N. Y. and first described and figured by Mr Squier on p. 78 of his *Aboriginal monuments of the state of New York* (Wash. 1849). Several years ago, while in conversation with Mr Squier at his residence in New York I happened to see the same ax lying on the mantelpiece. In handling the object I noticed that a small portion had been removed from it—for close examination by an expert, as Mr Squier informed me. This examination resulted in the discovery that the ax was not cast but hammered into shape from native copper. The former inhabitants of North America, I still believe—notwithstanding all assertions to the contrary—were unacquainted with the art of melting copper.—*Rau*, pref. p. vii

As to modes of working copper and the differences between the native metal and that brought by Europeans, reference may be made to a valuable paper by Mr Clarence B. Moore. He gives analyses of several articles from recent New York sites, but was unable to obtain those of native copper. From other sources some were procured. In that paper he quotes a personal letter from Prof. F. W. Putnam which is of general interest and is therefore reproduced here:

Just after I wrote my little paper on copper in the museum as the beginning of a series of papers on the use of metals,

copper began to come in from our Ohio explorations in a wonderful manner, until we now have copper in such abundance that a paper on the subject would be a volume. We have it hammered and cut into all manner of shapes—implements and ornaments—and with it have come several lots of ornaments made of meteoric iron—implements and ornaments—and also considerable silver (ornaments) and a little of gold. All these metals are hammered and cut, and we have the copper in all stages from the rough nuggets, through those partly hammered, to the sheets and the objects cut from them. To consider this the work of Europeans is an absurd perversion of the facts before us; and yet just because the facts do not agree with the theories of some who would have all facts drop into their theories, or else throw them out of consideration, these objects are spoken of as unquestionably of European origin, *traded* to our old mound building people of the Ohio valley by whites since the settlement of the country.—*Moore*, p. 220

Prof. Putnam's conclusion is that native copper articles of any kind are to be considered prehistoric if unaccompanied by European relics. Dr Cyrus Thomas has as plainly shown that European metallic articles have been found deep in some large mounds. His remarks have been quoted.

A large proportion of native copper celts gradually expand toward the cutting edge. Fig. 38 is a good example in the Bigelow collection, which was found on lot 99, Lysander, in 1881, not far from Seneca river. The ridged side has more protuberances than usual, and on the flat side a single medial line extends the whole length, with a few small ones near the margin. The thin top is bent over by hammering, showing how it was used. This figure is of actual size, as are all those where no dimensions are given.

Fig. 30 is in the same collection, and has an expanded cutting edge. It was found on the Ouderkirk farm, lot 76, Lysander, near Seneca river, and is quite thick and not very sharp, the edge having been dulled by use. One side is ridged as usual.

Fig. 12 is a very fine celt of this kind, the flat side of which is shown. A hollow above the cutting edge suggests a gouge. This edge is more rounded than usual and the other end comes to a point. The full length is a little over $5\frac{1}{2}$ inches, and the

implement is quite sharp. It was found on the Voorhees farm, lot 99, Lysander, in 1881. A lateral view is added.

Fig. 19 is a fine copper celt from Point Alexander, Wolfe island, north of Cape Vincent N. Y. It is much more tapering than most of those described and is 7 inches long. Though just north of our border it was found by one of our citizens and is in the Richmond collection. All along the St Lawrence the occurrence of copper implements on either shore may be considered an accident of travel. They occur on Wolfe island, Tidd's island near Gananoque, at Brockville, and on islands farther down the stream.

Fig. 62 was found on the south side of the Oneida river at Brewerton, and is in the Bigelow collection. It is $5\frac{3}{8}$ inches long, and is nearly flat on both sides. There are many linear ridges and it is somewhat sharp at both ends. The broad end had the corner cut by the finder.

Fig. 28 is from Dr Rau's half length of a New York copper celt, fig. 227 of the *Archaeological collection of the United States national museum*. He said of this:

The most beautiful article of a wedgelike character is a kind of chisel with an expanding, strongly curved edge, which shows a slight concavity, imparting to the implement almost the character of a gouge. The upper surface is nearly even, but the back part presents, as it were, two faces, which join in the middle, forming a longitudinal ridge.

Fig. 4 is from an outline sent to the writer by Dr D. S. Kellogg of Plattsburg N. Y. and shows a rude copper knife or hatchet, having the usual raised lines on both sides. It is reduced in the figure, measuring 3 inches between the extreme points.

Fig. 73 shows a large copper gouge with parallel edges. Perhaps from some flaw in the metal it was partially broken at the upper end and an attempt has been made to cut it off. It was found near Constantia, on the north shore of Oneida lake, about 1850, by Mr James Haynes. It went into the Terry collection. No implement has been found like it here and it is quite deep and thick.

Fig. 1 seems the finest specimen of its class yet found, weighing 3 pounds, 2 ounces, and being a little over $10\frac{1}{4}$ inches long.

The extreme width is 2 inches and it is $1\frac{1}{2}$ inches wide at the narrow end. The extreme depth is $1\frac{1}{2}$ inches. It is ridged on the lower side and high and sloping flanges form a socket at the broad end. These occupy more than a third of each lateral edge and a broad depression extends between them for $3\frac{1}{2}$ inches, against the angle of which the handle abutted. This feature often appears in spearheads made for similar hafts. It was found by Chester Wells in 1885, a mile south of Granby Center and was long used as a wagon wrench. A small piece was broken out of one of the flanges by him. The point is also now dull, but this might have been so centuries ago. It is now in the Bigelow collection. There is a smaller one like this in the national museum, which Dr C. C. Abbott called "a nameless object." It is $7\frac{3}{8}$ inches long and has an extreme breadth of $1\frac{1}{2}$ inches. The flanges occupy full half of the length and the socket measures $3\frac{1}{4}$ inches to the abutting angle. This came from Somerville N. J. A copper gouge, found in the Brockville mound, Canada, has similar features. In the Toronto collection there is a large adz of the same type but on the whole it is a rare form.

Fig. 21 is a very small article of native copper like a celt, and neatly formed. It is quite flat and was found on the island at Brewerton.

Fig. 22 came from the same place. It is a small cylindric piece of native copper which appears to have been worked, but not into any definite form.

Fig. 75 is a long and somewhat triangular article of native copper, which is flat and of uniform thickness throughout. It may be unfinished but would serve as a rude spear without sharpening. This was found at Union Springs and weighs $1\frac{1}{2}$ ounces. It is $5\frac{3}{4}$ inches long and the expanded base is nearly an inch wide. This may have been the beginning of a flanged socket.

Fig. 29 is a tube of native copper which may have been ornamental or useful, either as bead or sinker. A section of this is shown. It is rough, and made of a copper plate bent into a

cylinder and hammered together. One end is thin. It was found on the Oneida river about 20 years ago but its present owner is not known. The length is $2\frac{1}{2}$ inches.

Fig. 17 is a sharp and slender awl from Mr S. L. Frey's article in the *American naturalist* of October 1879, entitled "Were they mound-builders?" He said:

It might have been used for piercing holes in buckskin garments but as implements for this purpose were usually made of bone, with the point rounded and sharpened in a similar manner, and as these were obtained with comparative ease and were equally serviceable for sewing purposes, I think that possibly this copper implement had a different, or at any rate an additional use. According to many early writers the natives at the time of the discovery were found in possession of ornaments, necklaces, etc. of pearls, the perforating of which was done with a heated copper spindle. The square shape of this implement indicates that it has been set in a handle, and the point being very smooth, shows use of some kind. That it was intended for a drill of this description seems not improbable when viewed in connection with certain shell relics subsequently found, and which are described in this article.

The great neatness of this implement led to further inquiry and Mr Frey wrote: "The copper awl you figure from my drawing is exact. It is just as smooth and well finished as represented. It is the only prehistoric copper I ever found; in fact the only one, as far as I know, ever found in this section." This illustrates the curious elimination of early travel and habitation in the Mohawk valley. East, north and west of that valley, native copper articles have been often found.

The burial place was of a mixed character, for at the time he found this Mr Frey had not discovered the curious graves and relics which rewarded his labors at a later day. In his earlier digging he had found "at one time, in a grave, 30 arrowheads and a small copper awl." In one of those opened afterward he found copper beads, to be mentioned later. This judicious observer noted the widely different character of the graves, concluding that they could not be those of the same people. It is also to be remembered that there was no large village site close at hand, and that part of the cemetery had been removed before examination. The writer has since examined this awl.

Regarding Mr Frey's general question a few words should be said. But one other awl of this character has been reported from this state and this is much larger. It was a surface find. In other states they have been found in mounds. Prof. Cyrus Thomas reported several of these with illustrations and they closely resemble those of New York. In the Sue Coulee group, Crawford county, Wis. were copper articles with one of the skeletons. "Near the hand of the same skeleton were two long, slender, square copper drills or spindles, one about 9 inches long and $\frac{1}{4}$ inch thick, pointed at one end and chisel-shaped at the other; the other 7 inches long and pointed at both ends."—*Thomas*, p. 76. In another mound of the same group was a small one of similar character and a large copper ax, with copper beads and an obsidian implement. In one of the Rice lake mounds, Wisconsin, was a similar drill or spindle $7\frac{1}{2}$ inches long and pointed at both ends. In a mound on the Holston river, Sullivan co. Tenn. a copper spindle lay on the head of a skeleton. "It is 11 inches long, $\frac{1}{4}$ inch in diameter at the thickest part and appears to have been roughly hammered out of native copper with some rude implement. Immediately under the lower jaw were two small copper drills or awls with portions of the deer-horn handles still attached."—*Thomas*, p. 351. These quotations will show the proper place of the New York copper awls.

Native copper spears of two types have a wide range. In some the base is drawn out into a sharp or obtuse point for insertion in the shaft. These are usually notched on the lower edges for attachment by cords. In others the lower edges are raised and bent over, forming an angular socket, neatly made. This is often deepened for a short distance so that the shaft abuts against a shoulder. The flanges usually turn inward, giving a firmer hold. Unless very thin the blade is flat on one side and ridged on the other, and the usual hammered protuberances appear. New York specimens may have one or two notches on each side but some have none. In other states they occur with several deep and narrow notches on either side. Prof. G. H. Perkins has figured a fine example of this kind from Ver-

mont, and Mr Francis Jordan jr of Philadelphia found one remarkable example in 1890 on the eastern shore of Maryland, which is about 12 inches long, ridged and angular, and with six notches on each side of the base. This form has not been reported here. He found a large hoe blade of copper at the same time. The former is figured in the *Proceedings of the Numismatic and antiquarian society of Philadelphia for 1890–91*, p. 128.

Fig. 74 is a curious undulating spearhead obtained by Mr Twining in Ellisburg N. Y. There are double notches on each side of the base and the undulating edges are suggestive of some Scandinavian weapons. It is quite slender for its length, being $7\frac{1}{2}$ inches long with a maximum width of $\frac{5}{8}$ inch near the base, which terminates in a sharp point. Those found near the Seneca river often end in this way.

Fig. 35 is a very fine example from the latter region, now in the Bigelow collection. It is one of those drawn by the writer for Dr Abbott's *Primitive industry*, and was found on the Crego farm, just west of Baldwinsville and south of the river, near but not on an early fort site. The writer afterward found a small native copper bead there. The flat side is slightly concave, giving the implement a decidedly curved appearance. The present length is $7\frac{1}{4}$ inches, but the basal point has been slightly broken. The extreme width is a little over $1\frac{1}{2}$ inches. There is a basal notch on each edge for attachment. Each side of the longitudinal ridge is moderately hollowed, and the usual raised lines appear, the whole implement suggesting a rough casting, an appearance now known to be deceptive.

Fig. 31 is also in the Bigelow cabinet and was found on the Judge Voorhees farm, lot 74, Lysander, in 1875. It has a pointed base, but no notches, and is but slightly ridged. The blade is much thinner than the general base, a common feature with this form. A smaller similar one was found near Beaver lake, about 2 miles northeast of the last locality. This has disappeared.

Fig. 27 is in the same collection and much like the last. It was found in uprooting a large tree in the town of Hannibal in 1878–79.

Fig. 26 is a rough native copper spear with an obtuse point, possibly broken or unfinished. It is in the Smithsonian collection and came from Malta N. Y., west of Saratoga lake.

Fig. 25 is in the same collection, and came from Livingston county, N. Y. The base is not pointed and the implement suggests both the knife and spear. It is slightly rounded, and there are no basal notches.

Fig. 32 is in the Bigelow collection, and was found on R. Adsit's farm, lot 76, Lysander, north side of the river road and toward Beaver lake. Several copper implements have been found near there. This is a small form, flat on on side and rounded on the other. There is a notch on each side toward the pointed base. It is hardly $3\frac{3}{4}$ inches long but is neatly finished.

Fig. 50 is a thin copper spearhead found half a mile east of Onondaga creek, and nearly a mile south of East Onondaga village, beside an old Indian trail. It is ridged on one side and has a deep notch on each edge near the base. The base is obtusely pointed. It is but $3\frac{1}{8}$ inches long, and the edges are nearly parallel and quite sharp. It was found in 1894 by Mr George Slocum, its present owner, and is slightly twisted as a whole.

Fig. 49 has the outline of a pointed ellipse, rather obtuse at the base. One edge has one notch and the other two for attachment. It would have answered well for a knife and is as long as the last. It was found in the town of Venice, Cayuga co. in 1886.

Fig. 44 is another of these small spears, much thicker than the last two. It has a pointed base and opposite notches which are nearly midway in the edges. This was found on the north shore of Oneida lake June 12, 1886, on a point east of Big bay. The writer visited the spot afterward and found arrowheads and drills. The finder was Mr White of Geddes, then superintendent of schools, who soon disposed of it. It is not so distinctly ridged as some, but has the usual protuberances. The length is 3 inches.

Fig. 42 is from a drawing of a small spearhead in the state museum made by Mr R. A. Grider. It was obtained from the

collection of A. W. Allen, made on the east side of Cayuga lake. It is ridged, has a single notch in one edge and two in the other, one of the latter being midway. As drawn it is $2\frac{7}{8}$ inches long.

Fig. 55 is another of these short and broad forms. Below the notch on each side the edge projects into a kind of barb. The base is pointed and one surface ridged as usual. It is quite broad for its size, the length being $2\frac{3}{4}$ inches and the width 1 inch. It is in Dr D. S. Kellogg's collection and was found in the town of Peru, Clinton co. N. Y. Many articles of native copper have been found along the west line of Lake Champlain.

Fig. 41 is a longer spearhead with single notches on each edge, and a pointed base. It is slightly ridged on both surfaces, and is well finished. The length is slightly over $4\frac{1}{2}$ inches. This is in the Bigelow collection and was found near the Seneca river in Onondaga county.

There are many of the same general character which have an obtuse base. Fig. 11 differs from most of these, the base suggesting some yet to be described. The outline of this broken implement is much like that of some triangular notched flint arrows, and the surface is flat but has the usual lines on one side. It belongs to the writer and was found near Jack Reef, Seneca river.

Fig. 36 is a shouldered spearhead, without notches and with an obtuse base, which is in the Kellogg collection and came from Chazy. The base is a broad shank, slightly expanding near the end.

Fig. 14 may be either knife or spear, and is in the same collection. It was found at Plattsburg and, like the last, has no notches.

Fig. 65 is also in the Kellogg collection, and is quite large for this form, being $6\frac{1}{4}$ inches long. The other general features are much like those just described. This is from Plattsburg.

Fig. 68 is another slender implement in the same collection which was found on Valcour island in Lake Champlain. There are no notches and but slight shoulders. It is quite slender for the length, which is $5\frac{3}{16}$ inches.

Fig. 57 is in the same cabinet and was found at Schuyler Falls. It has a long broad shank, is distinctly shouldered, and quite irregular in outline.

Fig. 59 was found at Plattsburg and is in the Kellogg collection. It is distinctly ridged and has a notch on each edge near the base. The latter is obtusely pointed.

Fig. 16 closely resembles the last but is much larger. It was drawn by Mr Grider from a fine spearhead belonging to Mr W. B. Murphy of Schoharie county.

Fig. 34 is a fine spearhead found on the Randall farm near Saratoga lake and now in the state museum. The base is slender and pointed and the whole implement is narrow for its length, which is $7\frac{3}{8}$ inches.

Fig. 52 is in the collection of John Martin, Plattsburg, who says: "It was found when the new road was constructed past the United States army post at Plattsburg some 15 years ago. The place was on the right bank of the Saranac river some $\frac{1}{2}$ mile from the mouth." It is slightly ridged but is thin for its length, which is $6\frac{3}{16}$ inches. The shank is obtuse and it is moderately shouldered. Corrosion has turned it green. Mr Martin furnished fine photographs of his copper articles.

Three flat spearheads in the Waterbury collection and found together on the north side of the river at Brewerton, are of unusual character, and may be comparatively recent. No analysis of the metal has been made. They are quite flat, and are deeply notched at their broad bases, even more than one already mentioned. Fig. 71 shows one of these. There are a few striae, and the edges are sharp and beveled. The general appearance suggests a recent origin, with some peculiar features, but no age has been claimed for or assigned to them. Fig. 43 and 45 are the other two.

Fig. 20 is thus far unique in New York, though found sparingly elsewhere. It is a thick gouge, $2\frac{3}{4}$ inches long by $2\ \frac{3}{16}$ broad, having the sides turned into contracting flanges. The back is curved and the cutting edge abruptly beveled. It was found on the left side of the road from Port Byron to Howland island

near the Seneca river bridge. Some call this form a spud and it has been previously reported only from Wisconsin and Minnesota. It now belongs to Mr Harris of Rome N. Y.

Fig. 24 has an outline much like that of our modern knives. It is rare in New York but seems more common in Canada and elsewhere. It was found in Cayuga county and has a few of the usual raised lines. This is a good example of this form.

Fig. 78 is a much larger one in Mr W. L. Hildburgh's collection, found in Livingston county. His note is that "a meadow lark's wing was found bound on this." What evidence there is of this is not stated. Such knives have been found originally wrapped in fur, retaining traces and sometimes portions of this, for the salts of copper often preserved perishable articles.

There are many New York examples of native copper articles having a socket for the handle, made by turning up the edge. A fine example is in the Smithsonian collection, which was found in Tompkins county, N. Y. Fig. 2 shows this much reduced, the actual length being 9 inches. The socket is less artistically wrought than some and the back of the blade is rounded. It is quite thin for its size.

Fig. 13 is a very fine spearhead of this type, found near Seneca river, lot 75, Lysander, in 1893. It is in the Bigelow collection and is $6\frac{1}{8}$ inches long. The back is ridged and the socket moderately expanded toward the base. The flanges are neatly turned inward and there is the frequent angle between the socket and blade against which the shaft abutted. The inside surface of the socket is perfectly smooth, as though the shaft had decayed within it. A lateral view of this is given and no better example has been found here.

Fig. 33 is another found on Wolfe island, opposite Cape Vincent N. Y., now in the collection of Dr A. A. Getman of Chaumont N. Y. The finder bored a hole in the base for suspension, but the writer omitted this misleading feature. The socket expands toward the base as usual and occupies nearly half the length of the implement. It is also depressed but has not so abrupt a shoulder as the last.

Fig. 37 is a very thin copper knife or spear of this type, found near Cold Spring on the Hudson and belonging to Mr James Nelson of that place. It is $2\frac{3}{8}$ inches long and $\frac{3}{4}$ inch wide with a perforation near the base. Not being symmetric it may have been a knife. If of native copper the hole would be an anomaly, but the figure suggests a recent article and Mr Nelson's note called it sheet metal.

Fig. 56 is of the same class, the flanges contracting more than usual in the outline sent by the owner, Mr W. T. Fenton of Conewango Valley N. Y. In a note on this article Mr Fenton said: "I have lived in this valley over 50 years but have seen but one copper arrowhead. Of that I send you outline of actual size. It was found in the town of Poland, Chautauqua co. Mr Larkin claims to have found some copper ornaments in a mound he opened a great many years ago, but if I remember right he sent them to the Smithsonian institution."

In his *Ancient man in America* Dr Larkin often speaks of native copper articles, without mentioning their final resting place. In a letter to the writer he says he thought he sent them to the Smithsonian institution or the Peabody museum. Nothing could be learned of them there and it is to be regretted that all have disappeared. His published statements may be quoted without comment, omitting minor matters:

In the year 1859 while exploring some tumuli in the vicinity of the Red House valley we found numerous singular and interesting relics, among which were spearheads 6 inches in length with double barbs composed of masses of native copper; also several blocks of mica which were in about the same condition as when chiseled from the granite of the Alleghany mountains. It was near this valley where was found one of the most interesting relics ever discovered among the works of the ancient inhabitants. It was a flat piece of copper, 6 inches in length by 4 in width, artistically wrought, with the form of an elephant represented in harness engraved upon it, and a sort of breast collar, with tugs on either side, which extended past the hips. The great amount of copper implements and blocks of mica that have been found, contradicts the theory of Mr Squire, that the tumuli located in western New York are not the work of the mound builders. I am satisfied, beyond a doubt, that

the Indian races never mined for mica or copper, neither did they bury either of these articles with the remains of their distinguished dead.—*Larkin*, p. 19

The circumstance of the Conewango and the Red House valleys being on and near the different routes to the southern rivers may be the cause of the lavish distribution of copper in those sections.—*Larkin*, p. 20

He gave an account of the demolition of a large tumulus in the town of Cold Spring about 1820, as told him by the old Seneca chief, Gov. Blacksnake:

Great quantities of relics, such as gorgets, flint axes, arrowheads, and a great number of copper implements artistically wrought from masses of native copper which was brought from the mines of Lake Superior, were found with the bones. . . So rich was this mound with decaying skeletons and relics of curious workmanship, that *now*, after more than 60 years have passed away, fragments of human bones, arrowheads and copper relics are found in large quantities at each successive plowing. In the spring of 1879, a few days after the ground had been plowed, in company with two boys we found 15 arrowheads, a curious piece of copper, and nearly a peck of fragments of human bones.—*Larkin*, p. 23

In speaking of Oil creek he said: "In the year 1861 I saw tools found in different places on the creek which were composed of native copper, one of which weighed several pounds. It was something like a drill, rather flat, pointed at one end and appeared to have been hardened."—*Larkin*, p. 81

Dr Larkin believed that the American elephant was tamed and used by prehistoric races. "Finding the form of an elephant engraved upon a copper relic some 6 inches long and 4 wide, in a mound on the Red House creek, in the year 1854 and represented in harness with a sort of breast collar with tugs reaching past the hips, first led me to adopt that theory."—*Larkin*, pref. The first quotation might imply that he had not seen this; the other that he himself found it. Those acquainted with native copper will at once conclude that some ingenious imposition was practised on him; one of those which every antiquarian sometimes encounters.

Fig. 47 is not so well finished as some of this type and the socket is square at the base. It is in the Bigelow collection

and was found on lot 42, Lysander, west of the village of Phoenix and Oswego river. The socket is short and the flanges rather low.

Fig. 48 is in the same collection, but came from near the Bay of Quinte, on the north shore of Lake Ontario. The finder unfortunately had ground down all irregularities. It is flat on one side, ridged on the other, with a square base. The flanges are parallel and much contracted and the socket is depressed, meeting the blade at a right angle.

Fig. 67 is a long and rather rude spear of this type, in the Kellogg collection at Plattsburg N. Y. where it was found. The socket is short and nearly as wide as the blade, with parallel incurved flanges. This kind of socket was used at a later day.

Fig. 66 is in the Kellogg collection, and was found at Clintonville in Clinton county. The general form is good but it seems unfinished. What should be the point has a broad protuberance and we might expect the removal of this in a perfect article. The shank is narrow and well worked, but is rounded at the end.

Fig. 51 is from the Martin collection in Plattsburg and was found about 2 miles northeast of that place on a sandy ridge at the head of Cumberland bay. Mr Martin's account follows: "The ridge referred to is wooded and was originally a long tongue of land between the bay and a river known as 'the creek,' whose course was artificially changed some 50 years ago. This implement shows lamination at the base. It is somewhat weathered and is green on most of the surface. A cross section is a square, except for about an inch from the point, where it is round." He called it a borer or awl and it may be compared with Mr Frey's shorter awl in fig. 17. This is very large beside that, being $7\frac{3}{8}$ inches long. It is a rare form in New York and the finest yet reported. The writer is much indebted to Mr Kellogg and Mr Martin for figures of their fine articles.

After describing the foregoing the writer obtained a few other illustrations from various parts of New York. For some of these he is indebted to Mr C. C. Willoughby, assistant curator of the Peabody museum, Cambridge Mass. Fig. 171 is a native copper

ax or broad gouge from Avon N. Y. given to that museum by Dr William Nisbert. This form seems more common in the Genesee valley and that of the Susquehanna than elsewhere. The general form is that of the ax, but the edge is slightly hollowed, as will be seen in one of the sections. Fig. 177 shows a piece of native copper given by Dr Nisbert and coming from the same place. It has been hammered into a rude celtlike form but has not been finished. Its importance is in this lack of completion, showing that some native copper articles may have been made here. Very few of such fragments have been found.

Fig. 173 is from an article entitled "The mound-builders," by W. L. Stone, in the September number of the *Magazine of American history*, 1878, p. 532. It is of a spearhead found in 1876, near the outlet of Saratoga lake and north of Moon's Lake house, by J. W. Coit. Fig. 174 is from the same article and is a figure of a similar but larger spearhead. This was found the same year by Horace Kelly, 2 miles up the lake on the Ramsdill farm. The point has been broken off. Both these slender spearheads have pointed tangs and are typical specimens.

In the same article Mr Kelly is credited with finding another fine spearhead at Ramsdill's cove on Saratoga lake. No description or figure of this is given but Mr Stone said it was tinged with red, apparently vermilion. If this were the case the article would be modern. Another curious find by the same person was a skull, colored on each side by verdigris. From this Mr Stone inferred the use of copper earrings. His article has some interesting statements and curious conclusions. Considering its sparse population the region about Saratoga and Lake Champlain has been unusually prolific in native copper articles. It is probable they were brought directly from Lake Superior, through the Georgian bay and Ottawa river to the St Lawrence, and thence into Lake Champlain. This was an early and well known route.

Fig. 172 is a fine and broad spearhead of native copper from a drawing by Mr Van Epps, made Aug. 1, 1901. It was found in Saratoga county many years ago and now belongs to William T. Becker of Schenectady. In this specimen the broad tang is quite short and by itself would have afforded a slight hold to the shaft.

This made necessary a notch on each side near the base. The reverse is flat and the ridged side is shown, with the usual green corrosion and hammered streaks so commonly found. He described these as a "threadlike veining of the copper, with a smooth, polished surface, though with a rich patina. In fact, this side of the blade is a vivid green of beautiful tint. The other side is smooth, unpitted, and blotched yellow and green." These are frequent features of these implements.

Two small axes or celts of native copper the writer found in the fine cabinet of the Athens historical society, Pennsylvania. Fig. 175 is one of these, belonging to Dr C. H. Ott of Sayre Pa. but found at Owego N. Y., like the next. It is symmetric and well wrought. A longitudinal section is given. Fig. 176 is another of these, more irregular and like an ax. It belongs to Mr Percy L. Lang of Waverly N. Y. Both are fine and in good condition. The writer learned of no other articles of native copper near the Susquehanna and Chemung rivers, the general range being farther north. Others will probably be found but to no great extent.

Mr Van Epps sent also a figure of a fragment of a native copper ax, "found on the ridge near Edmonds house on the Vlaie," in 1875. This is in the town of Broadalbin. It now belongs to Mr E. B. Markham, Northampton N. Y. The curved cutting edge remains, 2¼ inches wide, and the fragment is a little more than that in length. He also kindly furnished a statement of native copper articles found in eastern New York but not including Lake Champlain. He commenced his descriptions in February 1894, bringing them down to November 1901, and they embrace 10 celts or axes, nine lance-shaped blades, nearly all with tangs, and an interesting find of 135 beads. His account follows:

A brief description of the celts shows four found in the town of Glenville, Schenectady co. alone. Three were apparently surface finds; the fourth was from a grave opened by a steam shovel in a gravel bank, midway between Hoffmans Ferry and Schenectady. This was described in the *American antiquarian*, March 1894, p. 110. Some years later the interesting lot of native copper beads described below was obtained from another grave in the same bank.

One celt is recorded from the vicinity of Sharon Springs, Otsego co., one from Stuyvesant, Columbia co., the latter being in the collections of the New York state museum at Albany; and two others, found quite near the latter, in the town of Schodack. These two were found about the year 1893. Another, found near Glens Falls, is listed as lot no. 203 in the catalogue of the Wagman collection, sold in Boston by Woodward, in 1886. This measured $2\frac{1}{2}$ by $4\frac{1}{2}$ inches.

The tenth and last to be mentioned was found on a relic strewn sand spit, jutting northward into the great Sacandaga Vlaie near Northampton, "the Fish-house," Fulton co. This is a broken portion of the usual form of native copper celt, a fragment forming a triangle, whose sides measure about 2 inches, one being the cutting edge of the implement. The fracture, which is ancient, appears to have been made with great violence, for the fragment remaining is bent, showing the effect of a torsional twist or strain. This interesting relic was found in 1874 or 1875 and is covered with a fine green patina. All of the 10, as far as can be ascertained, are of the common rectanglar form, varying but little from the dimensions of the one from Glens Falls.

The lance-shaped blades, whether used as knives, spear or arrowheads, present a greater diversity of form. Of the nine blades listed five are from Saratoga county. The remaining four are from Warren county, two of which were found near Glens Falls, one from French mountain, Queensbury, and the last from the vicinity of Lake George. Modern territorial boundaries count for nothing in archeologic science unless based on some prominent natural division of land by mountain range or water, and so it will be seen by those familiar with these localities that the whole of the blades recorded were found in a very small area.

One of those from Saratoga county is a most beautiful example of the ancient American's skill in working native copper. It is now in the collection of William T. Becker of Schenectady N. Y. It is in absolutely perfect condition, is beautifully patinated in different tints, and has the unusual feature of a deeply notched base in addition to the usual tang, which however is very short. Its length is $4\frac{1}{4}$ inches and greatest breadth $1\frac{3}{8}$ inches. Two others of the blades listed, of the common variety with long tang, were described and figured by William L. Stone in the *American magazine of history* for September 1878. One is described by him as being bronze but this is doubtless an erroneous idea.

Closing the list of objects made by the aborigines from native copper is the find of beads numbering 135. This was made about midway between Hoffmans Ferry and Schenectady, at a gravel ridge in the town of Glenville, $\frac{1}{2}$ mile from the north bank of the Mohawk river. In opening this bank several graves have been

disclosed. The one containing the beads had no other relics save a few crumbling fragments of bone, while the grave containing the copper celt, but a few yards distant, yielded quite a store of fine objects, among which were an ornamented slate tube, some awls and a hook of bone, several hundred small perforated seashells, and a very fine doubly perforated boat-stone, made of cave alabaster. The 135 beads, varying from $\frac{1}{4}$ to $\frac{1}{2}$ of an inch in diameter, were made by coiling a pounded strip of native copper upon itself, and then by further dextrous beating bringing the lapped edge down to an almost perfect weld. Unfortunately for science this interesting find was scattered instead of being preserved intact.

On reviewing this list an interesting question is suggested. The indicated localities show that all described, with the exception of the celt from Sharon, are from the Hudson valley from Stuyvesant north to Lake George, and from the lower waters of the Sacandaga and Mohawk rivers. In fact every specimen listed, with possibly two exceptions, comes within the bounds of the ancient territory of the Mahikans or River Indians. Can we thus conclude that these were made and used by these Indians? Certainly, to my knowledge no native copper implements have been reported from any part of the Mohawk valley west of the localities mentioned. All of the numerous private collections of local material in the Mohawk valley, from Amsterdam to Utica, are absolutely barren of relics of this character. Triangular and conical arrowheads, rolled tubular beads, trinkets, etc. made from sheet copper and brass of colonial times, are quite abundant on castle and village sites on either bank of the Mohawk west from Amsterdam, but never an object of native copper has appeared. Garoga, Otsquago and Cayadutta, the three great Mohawk strongholds of precolonial time, with their myriad relics unearthed, tell us the same story—an utter absence of native copper.

In qualifying the above suggestive statement it may be said that the Palatine Bridge awl and beads are presumably of native copper, and that nowhere are native copper articles more frequent than in Clinton county near Lake Champlain. They seem everywhere to have been lost in travel and they are rare in the Mohawk valley because that was not a favorite route till the Mohawks came there late in the 16th century. Even then the river was little used west of Canajoharie for a long time.

Several of the articles mentioned by Mr Van Epps are illustrated in this bulletin, and can be compared with his account.

His ability and experience are well known, and these have been of great service in the present work.

Among the articles of native copper not figured here is one formerly in the state museum, from H. Van Rensselaer's farm near Ogdensburg. It is classed as a copper pickax. A fine triangular copper celt also belongs to the museum which came from Stuyvesant, Columbia co. One article of native copper was found on D. F. Shafer's farm, Schoharie. Mr Henry Woodworth of East Watertown has a fine spear of this material 4 inches long. A neighbor found a larger one which he unwisely polished. Mr W. P. Letchworth of Portage says: "I once had in my collection an ancient copper hatchet, excavated near Silver Creek N. Y. which disappeared in a loan exhibition held in Buffalo many years ago."

Copper implements have been reported at East Aurora, but most relics are recent there and these may be inferred to be the same. At the opening of the Cambria ossuary in 1823 copper and iron implements were found with flint arrowheads and pottery. Though of an early date the copper there was probably not native.

The Wagman collection was sold at auction in 1886. It was made up of articles found not far from Saratoga and in it were three of native copper. One was described as a combined spearhead and bodkin, probably a spear with a long and sharp tang. This was from Glens Falls and measured $6\frac{1}{2}$ inches by $\frac{7}{8}$ inch. An arrowhead from the same place was $4\frac{1}{2}$ by $2\frac{1}{2}$ inches, which is unusually wide for such an article. An elliptic and pointed spearhead was 6 by $1\frac{1}{4}$ inches. In the *Smithsonian report* for 1879, Mr N. Cole mentioned a native copper spear, found near West mountain, Warren co.

Copper articles were found in opening a mound in Mount Morris in 1835. These have since been reported as of brass, including brass kettles. Mr Hough mentioned a native copper chisel in Ellisburg, Jefferson co. Mr T. A. Cheney said, in describing a circular work and its relics on the east bank of the Allegany river:

Among these were spearheads some 6 inches in length with double barbs upon each side and formed from native masses of copper. . . Fig. 9 represents a copper arrowhead of fine finish which was disclosed within the inclosure. It is stated that spearheads, hatchets, etc. of iron, much oxidized by exposure, had been observed within this ancient work. None came to my notice.—*Cheney*, p. 49

The arrowhead represented is large but otherwise like those of European copper found on Iroquois sites of the 17th century. It is possible that native copper articles were found with this but Mr Cheney did not say he saw them. Others have reported modern copper arrows from forts on Cattaraugus creek, not found by them and therefore subject to doubt. They may have been used by the Eries in the 17th century.

Besides 135 tempered copper beads found in a grave 5 miles northwest of Schenectady, Mr Van Epps reported a native copper ax in the *American antiquarian* for 1894, found 20 years earlier. Fragmentary copper occurs in a few places. Most of the native copper implements now known in New York have been gathered within a quarter of a century and there may be many unreported now in private hands. Mr J. W. Nelson reported a fragment of native copper, 3 by 5 inches, with silver veins, from Deming's point, mouth of Matteawan creek, and a double-pointed knife 4 inches long. Copper spears have been doubtfully reported from Fredonia.

In the summer of 1901 Mr Lorimer Ogden, of Penn Yan, obtained a fine copper spear, 6 inches long, but no further description of this has been received, nor any notes of locality. The find is quite unusual for that section of New York, as such articles seem very rare in the lake region of the central and western parts of the state.

A fine celt of native copper was received too late for illustration, and is now in the Bigelow collection. It presents no unusual features, but has the black lines, corrosion and verdigris common to all articles of the kind. The general thickness is $\frac{5}{8}$ of an inch, gradually sloping on one side to the top, but more abruptly curving on both sides to the broad cutting edge.

One lateral edge is straight; the other curves, so that the width, which is $\frac{7}{8}$ of an inch at the top, becomes an inch at the center and $1\frac{1}{2}$ inches at the chisel edge. This edge is angularly curved, and quite sharp. Like most of the Bigelow articles it comes from the vicinity of the present owner's home, having been recently found near Three River Point, at the junction of the Seneca, Oneida and Oswego rivers. That part of New York has proved peculiarly rich in native copper, perhaps from its navigable waters and fine fishing grounds.

Among Canadian articles not yet found in New York is a native copper spike, found with two others and some copper beads on Wolfe island. It is pointed, slightly curved, angular, and has the head bent over so as to form an eye. This is $\frac{1}{4}$ inch in diameter and $3\frac{3}{8}$ inches long.

Another is a very slender one-sided spear or knife, with a tang, above which it has its greatest width of a little over an inch, tapering thence to the point. The other edge is 14 inches long. This came from St Joseph's island.

The most remarkable is a broad, thin, and much curved copper knife, the concave edge of which has 15 equidistant rounded teeth. It is a little over 13 inches long and nearly 3 wide. Part of the wrapper of beaver skin still adheres to it. This came from Midland City, the site of an old Huron town, giving it an age of at least 260 years.

In Wisconsin native copper articles much like the rolled arrowpoints of New York have been found, but they are heavier and the edges do not meet. The copper fishhooks there differ but little in appearance from the recent Iroquois forms. The copper crescents of that state are broad and curved plates, with sharp projections at each end of the concave edge. A similar ornament or implement in the national museum tapers regularly from near the center to each end and has no projections. It was found in Maryland and measures $8\frac{1}{4}$ inches from point to point. Another in the same museum came from Canada. This is wider, more curved, and is 8 inches across. A very slender tool in the same collection is also from Canada. It is $11\frac{3}{8}$ inches

long and the greatest width is at the base, where it is $\frac{3}{8}$ inch wide, tapering thence nearly to the point. Flanges extend halfway on each side.

Recent copper and brass implements

The New York aborigines were not slow to see the advantages of metallic articles of all kinds, whatever they may have had before Hudson's voyage. His account of their copper tobacco pipes may be compared with incidents in Gosnold's voyage a little before, along the New England coast. It is by no means improbable that some European articles had already found their way to them, but opportunities at once became greater. The Dutch soon followed Hudson's lead to the upper waters of the river, and early trade may be said to have commenced there rather than in the harbor of New York. We may dismiss the mythic Tawasentha council as far as the Iroquois are concerned. Their eastern boundary reached only the west line of Albany county, and the hostile Mahikans held the west bank of the river till Van Rensselaer purchased the land on both sides. It is quite likely the Mohawks soon contrived to trade on or near the river, but they had no treaty with the Dutch when Corlaer (Arent Van Curler) visited them in 1642, nor is there any evidence of any till 1645. Adriaen Van der Donck said: "In the year 1645 we were employed with the officers and rulers of the colony of Rensselaerwyck in negotiating a treaty of peace with the Maquas, who were and still are the strongest and fiercest Indian nation of the country; whereat the Director general William Kieft on the one part, and the chiefs of the Indian nations of the neighboring country on the other part, attended." The Mahikans had then removed to New England.

Preliminary to this first formal council with the Mohawks, Corlaer said in 1642, he "brought presents there, and asked that we should live as good neighbors, and that they should do no harm to either the colonists or their cattle, to all of which the savages at the three castles gratefully agreed." Three years later the treaty was made. The Mohawks of the first castle may

have referred to Corlaer's informal visit when they said, Sep. 24, 1659: "Brothers, 16 years have now passed since we made the first treaty of friendship and brotherhood between you and all the Dutch, whom we then joined together with an iron chain. Since that time it has never been broken either by us or by our brothers and we have no fear that it will be broken by either side."

It would be easy to bring other proof that this supposed early Tawasentha council with the Iroquois was never held, but the practical fact remains that Indian trade began at Fort Orange or Albany, and that it speedily penetrated farther. The Minquas, or Susquehannas, lived on the lower waters of the Susquehanna river and were kindred to the Iroquois. They were visited by Capt. Cornelis Hendricksen, who made a report of his discoveries, Aug. 18, 1616. Among other things, "he also traded for, and bought from the inhabitants, the Minquaes, three persons, being people belonging to this company; which three persons were employed in the service of the Mohawks and Machicans; giving for them kettles, beads and merchandise." It has been reasonably supposed that these Dutch traders among the Mohawks were taken prisoners by their enemies, the Minquas, and that on their knowledge of the country the maps of 1614 and 1616 were partially founded. Farther we know not.

War between the Mahikans and Mohawks interfered with the Albany trade at times and in these hostilities the Dutch became involved in 1625. The commander at Fort Orange assisted the Mahikans, but the Mohawks beat the combined party and killed him and six of his men, cooking and eating one of them and sending portions to their villages to show they were superior to the white men. Yet the Mohawks bore no malice. Peter Barentsen visited them a few days later and they said they would not have injured the Dutch had they not meddled with them. After this hostile episode there was no farther trouble.

The Dutch did not at once sell guns to the Iroquois and were shrewd enough to withhold them from the River Indians when furnishing the others, but whether they sold arrowheads to both

may be a question. The arrowheads found with other things in an Indian grave at Fall River, on which Longfellow founded his well known ballad, are precisely like those found on most recent Iroquois sites. These are generally a long triangle with various other features. For convenience those of iron will be placed with them here. Most of these are cut from thin sheet iron or brass, commonly with perforations by which they were securely bound to the shafts. Parts of these often remain, having been preserved by the salts of the copper. As shreds and large fragments of sheet copper are frequent on Iroquois sites it is probable that many arrowheads and ornaments were made on the spot. Sometimes an old brass kettle was used in this way.

Fig. 46 is a long spearhead from Cattaraugus creek, made from an old brass kettle. At the base the edges are rolled over so as to form a socket. This is the largest the writer has seen.

Fig. 6 comes from Cayuga county and is reduced in size. It is made of sheet copper and is $1\frac{3}{8}$ inches long. There is a perforation by which a part of the shaft remains attached by sinews. Fig. 70 is an unusually long and rather rough copper arrowhead from Indian hill, Pompey. This was the town of 1654, and these triangular arrowheads have been frequent there. It was occupied till 1682. This is unperforated. Mr David Boyle calls these ghost arrows.

Fig. 82 is in the collection of Mr W. L. Hildburgh and was found in Oneida county near Oneida lake. It is of rolled copper, pentagonal, with one perforation and another begun. This form is rare. Fig. 83 is similar but longer in proportion and has a very small perforation midway. It is in the same collection, and from Livingston county. Fig. 84 is in the same cabinet, and has a stem, rather a rare feature in this class. This is from Oneida county.

Fig. 63 is a triangular arrowhead with indented and undulating base. It is not perforated and comes from Indian Castle, north of Watervale, where copper arrowheads have been abun-

dant. This was occupied in 1677. Fig. 103 is a long and perforated triangular arrowhead, also from Pompey. Fig. 111 is of a different character, being of yellow sheet brass, stemmed and barbed and with notches in the edges. This is from the fort south of Pompey Center, occupied about 1640.

Fig. 117 is from Cayuga county and was found in 1888. It has no perforation but part of the shaft remains attached, being bound below the metal. Mr W. W. Adams, the finder, called it a brass arrowhead.

Fig. 113 is of copper and from the Sheldon fort, lot 69, Pompey, probably occupied about 1630. It differs from most in having the two long edges slightly convex. Fig. 129 is one of three triangular arrowheads found by the writer at Indian hill, Pompey, in 1886. This is perforated but the others are not. Fig. 133 is of rarer material, being of thin iron. It is triangular, with indented base, and having one of the long edges irregular. This came from Indian Castle, Pompey. Fig. 134 is from the same place and is of copper. The perforation is central and long, and the ends of the base have a slight upward curve. Fig. 140 is a long triangular brass arrowhead from the fort south of Pompey Center, having convex edges. Most of the articles from this site are in the Vail collection.

Fig. 141 is a brass arrowhead from an Oneida village site near Munnsville, Madison co. It has a sharp angular indentation in the base and another in one lateral edge. Fig. 142 is another of sheet brass, found in 1879 east of the Oswego river at Phoenix. It is barbed and stemmed.

Fig. 143 was drawn from one taken from a grave near Amsterdam N. Y. and in the possession of Mr Le Grand S. Strong. It has an indented base and a square perforation. This is unusual though not unique. Mr Grider gave the same feature to two others. Fig. 144 is one of these, from the same place, and differs from the last in its pentagonal form. Fig. 159 is the third of these, and is much larger than the others.

Fig. 157 is a large and fine brass arrowhead, stemmed and barbed. It is from Stone Arabia and is in the Richmond collec-

tion. Fig. 160 is a copper arrow with angularly indented base, and is in the same cabinet. It was from the Nellis farm near Palatine Church, and with it is a larger one with slightly indented base. Fig. 164 is a triangular brass arrowhead from the Sheldon fort, Pompey. This is not large, and the base is convex. Fig. 58 is from the same site and like the last.

Fig. 149 is another triangular arrowhead from Indian hill, Pompey. It has a central perforation and an indented base. Fig. 150 is from the same site and is similar except in having a straight base. Fig. 152 is a large triangular arrowhead, one edge of which is convex. The perforation is central. It is from Happy hollow, west of Canajoharie. Fig. 153 is a narrow triangular arrowhead from Indian hill, Pompey. The base is slightly convex.

Fig. 86 is a very neat little brass arrowhead, found near Oneida lake, and of unusual form. There are slight notches in the lateral edges of the sloping base and the cutting edges are a little convex.

Fig. 151 is of quite a different type. There is a short stem with an expanded base, and the shoulders are almost barbs. The lateral edges are beveled and sharp and there are several long incisions on the flat surface. The point is broadly rounded, and it may be one of the later steel arrowheads. It is in the collection of the Onondaga historical association, but without locality. Fig. 54 has a similar base, is of iron or steel, and not unlike the last in general character. It is beveled from the center and there is a large perforation on each side above the shoulders. The edges of these have been hammered down. It was found at Baldwinsville in 1880 and is in the Hamill collection. Fig. 184 is a fine and curious iron arrowhead, with notches. It is in the Coats collection and from the Onaghee site.

There is another class of recent copper arrowheads barely separated from ornaments. A triangular and rather long piece of sheet copper was rolled into a slender cone. If it was to be used as a bangle, with a tuft of colored hair inserted, the narrow

point was left a little open for suspension. If an arrowhead was desired, it was rolled tightly so as to make a sharp point. Fig. 85 shows one of the latter, in the Hildburgh collection, which has part of the slender shaft remaining. It was found in Livingston county, where the form is frequent. Fig. 148 is another, belonging to G. W. Chapin of Fonda N. Y. and was found on Briggs creek, north of the Mohawk river. The writer has seen many on the Pompey, Owego and Cayuga sites, and they abound in Ontario county. Fig. 183 is a fine example, recently found at Indian hill in Pompey.

In these selections from a great number of specimens and figures, it will be seen that the Iroquois changed the material but not the form of the arrowhead. Probably nine out of 10 are simply long triangles, the favorite Iroquois form when they used stone. The rolled and cylindric examples do not differ much in form from the earlier ones made of horn. Those with stems are everywhere rare, and some were not made by the Indians, but sold to them or given as presents. Most persons are familiar with the iron arrowheads used by our western tribes but they are hardly a new feature of savage life. Some Abenakis came from New England to visit Count Frontenac in 1691 and proffer him their aid. In reply he told them they might have all the iron arrowheads they could carry away. This shows he had a constant and abundant supply.

Brass kettles

The earthen pot survived the coming of the brass kettle for a generation, for poor Indians could make the former when unable to buy the latter. The advantages of the metallic vessel were too great, however, to be foregone except in case of need. It was light, durable and convenient, and was at once a favorite. Even to the happy hunting grounds its spirit could go with the Indian warrior. Hence came a curious custom among the Hurons of Canada, always in early days noted as thieves. The articles were valuable and the graves might be robbed. The safeguard was to cut a hole in the bottom with an axe, which

ruined it for earthly use but not for spiritual. Nearly all Canadian vessels of that period are thus marred.

It was not so in New York. Fragments of vessels are found, but an incredible number of perfect ones have been exhumed, many of which afterward did faithful service in the kitchens of pioneers. In graves they often contain traces of food, charred corn, dried grapes, chestnuts, raspberry seeds and other things.

Large vessels might be used in villages, but travelers preferred those which were small and light. For convenience these were sometimes placed in caches or hid in trees. Thus, when Cammerhoff and Zeisberger were at Skaneateles July 21, 1750, they said: "There we found the kettle which we had concealed when we passed here the last time."

The lack of this kettle, while at Onondaga, gave them occasion to note another use. A war party was about to set forth and on the evening of July 11 they were invited to a farewell feast:

The repast was held in the house of the chief and all was conducted in a very ceremonious manner. Every one brought his kettle. The chiefs sat together and our seats were in the midst. After the usual ceremonies the meal was served by two servants. They had boiled a whole pig with Indian corn and the servants continued helping the guests until the supply was exhausted. As we had no kettle or dish, they furnished us with a kettle and filled it very full. We were still hungry from our long fast and ate the food with great relish. When we had emptied our kettle they filled it again and we took it home with us.—*Cammerhoff*

At the 10 days dead feast and other like occasions, the Onondagas still carry home parts of the feast in their tin pails, but they do not now eat from them. In old times it was customary for all to carry their bark dishes and wooden spoons. When Conrad Weiser and John Bartram were at Onondaga in 1743 the latter gives the impression that the feast was more in common. He said: "After 4 o'clock we all dined together upon four great kettles of *Indian* corn soop, which we soon emptied." A few days before Weiser was at a feast with 18 Onondaga chiefs. Several songs opened this, followed by the emptying of a two gallon keg of rum in mutual healths. "After that the

kettle was handed round with a wooden spoon in it; every one took so much as he pleased." This may have been placed in his own small kettle.

In 1684 La Salle wanted 2000 pounds of small brass kettles at Fort Frontenac, costing 1 livre, 5 sous, a pound. These would sell for 4 francs a pound, yielding a great profit. The English and Dutch sold these also but included them among presents. In 1693 Gov. Fletcher gave the Mohawks 24 brass kettles for cooking to replace those the French had destroyed in February. Some of 2 or 3 pounds weight were among the presents of the following year. They prized small brass kettles but large ones were needed for public occasions. When Schuyler and Livingston came to Onondaga in 1700 the Indians, "according to their custom, hung over a great kettle of hasty pudding made of parch'd Indian meal, and sent it us." The great kettle is now of iron but is still a feature of New York reservation life.

As one feature of public gatherings and great occasions the kettle became symbolic. When Frontenac was preparing to invade Onondaga in 1696, he spoke to his friendly Indians about "the Great Kettle from which the whole world will take what it wants to keep alive the war unto the end. Be not impatient; that Kettle has not yet boiled; it will boil soon. Then will Onontio invite all his children to the feast and they will find wherewithal to fill them. The tears and the submissions of the Iroquois will no longer be received as in times past. They have overflowed the measure; the patience of the common father is exhausted; their destruction is inevitable."—*O'Callaghan*, 9:645

Dablon described the general war feast at Onondaga in chapter 10 of the *Relation* of 1656, and part of this is quoted here:

We saw in the latter part of January the ceremony which takes place every winter in their preparations for war, and which serves to stimulate their courage for the approaching conflict. First of all the war kettle, as they call it, is hung over the fire as early as the preceding autumn, in order that each of the allies may have the opportunity to throw in some precious morsel to be kept cooking through the winter; that is to say, in order that they may contribute to the enterprise which they are planning. The kettle having boiled steadily to the

month of February, a great number of the hunters of Sonnontouan (Seneca) and of Oiogoen, (Cayuga) having repaired hither, made the war feast, which lasted several nights. . . The Father (Chaumonot) was invited to put something into the kettle to make it better. He told them that that was certainly his desire; and accommodating himself to their customs, he assured them that the French would put some powder under this kettle, which pleased them greatly.

To upset this kettle was to abandon warlike plans. To boil the flesh of an enemy in it was often metaphoric, but much more frequently literal. William L. Stone quotes from Ramsay's *History of the revolution* a passage apparently referring to Guy Johnson's council with the Indians at Oswego in 1775:

Colonel Johnson had repeated conferences with the Indians and endeavoured to influence them to take up the hatchet, but they steadily refused. In order to gain this cooperation, he invited them to feast on a Bostonian and to drink his blood. This, in the Indian style, meant no more than to partake of a roasted ox and a pipe of wine at a public entertainment, which was given on design to influence them to cooperate with the British troops. The colonial patriots affected to understand it in its literal sense.—*Stone*, 1:88

It may be noted that Was-to-heh-no is still the Onondaga name for the people of the United States, being the nearest approach they could make to pronouncing "Bostonian" a century ago. The figurative use of many terms has been often explained but the early Iroquois had a well founded reputation for cannibal tastes. The eastern Indians called them Man-eaters.

Though the subject of cooking and serving meals is connected with that of the utensils employed, a bare reference may serve here. Not much time was wasted in preparing food till those later days when the kettle was always over the fire. Some ate directly from this; others used small kettles, bark dishes and wooden spoons. Indians had their changing and local fashions even as we do. Their few vegetables and abundant game gave them all the variety they required. Greatly prized were the three supporters of life, corn, beans and squashes, and of these they have pretty stories to tell. In agriculture the colonists learned some useful lessons from them, and the French mis-

sionaries preferred meal ground with the wooden pestle and mortar to that from their own hand mills. In plentiful times they reveled; in times of dearth they ate anything they could. In Indian corn they left a priceless legacy to the land.

A few illustrations of brass kettles will be given, as well as of some parts. They were serviceable after their original use was gone, being formed into arrowheads, knives, saws and ornaments of many kinds. Examples of some of these secondary uses will be given.

Fig. 158 is a much reduced figure of one out of many kettles found in Cayuga county in 1885-86. Fig. 155 is another of actual size, in the collection of Mr C. F. Moseley, Bergen N. Y. It is from Honeoye Falls, where many similar ones have been found. Fig. 147 is another from the same place, of actual size. The ears are of different forms. This one is in the Dann collection, is not corroded, and is in fine condition. Another, much like this, is from the same place, and now in the state museum. It is $5\frac{3}{4}$ inches in diameter, and almost 3 inches deep. One with it is an inch wider and a very little deeper. One found 3 feet underground, at the junction of Wood and Fish creeks, near Oneida lake, has a top diameter of $5\frac{1}{2}$ inches, bottom $4\frac{1}{8}$ and a depth of 3 inches. This was much corroded. The rim was rolled but not wired, and the ears for the bail were cut out and riveted in place. It was close to the face of a skeleton and bottom side up. Other relics were found several feet deeper, but the shifting sand made the original depth doubtful.

Brass tobacco boxes were among the presents of 1694, and these are occasionally found. They are circular and flat and were sometimes used to hold paint. Tomahawks are frequently made of brass, with a steel edge.

While most of a broken brass kettle could be used, the ears were not available, and so are sometimes found in a perfect condition but detached from the vessel. Fig. 128 shows one of these which forms a thick loop, with the ends riveted to the vessel. This is from Indian hill, Pompey, where this form is common, and is of actual size. Fig. 156 is also of actual size, the rivets

remaining. It is made of a flat plate of brass about as thick as the kettle, inside of which it was placed. The corners of the plate are bent over. This is from the fort south of Pompey Center, making it 15 or 20 years older than the last.

Copper spoons are rather rare, the Indians preferring the wooden ones which they made with so much taste and skill. Fig. 137 was drawn by Mr R. A. Grider from a large copper spoon belonging to Mr D. I. Devoe of Fort Plain N. Y. It was made from part of a kettle, and was found in a grave. Fig. 138 is a profile view of another made of pewter, and fig. 139 is a full view of the same. The form is much like that of the wooden spoon but lacks the ornament at the top of the handle, which is bent over. This was found in a grave in Cayuga county with a pewter mug containing 44 French coins, dated from 1642 to 1656. Some of the earlier dates may be doubtful.

Fig. 131 is a flat copper spatula, found on the Odell farm, lot 3, Van Buren, on the south side of Seneca river. It has been hammered into shape, and is rather smooth. This may have been once nearly on a plane but is now considerably bent. Fig. 163 is much like the last in outline but has a longer handle, thickened at the end. It is of iron and was found in the town of Fleming in 1887.

Among the presents recommended for the Five Nations in 1694, were "50. Brass Kettles of two, three, & four pound a p^{ce} thin beaten and light to Carry when they go a hunting, or to war if the Continue."—*O'Callaghan* 4:126. The high value the Indians placed on "small brass kettles" was noted in 1696. Among the presents of that year were 30 small and 14 large kettles.

For trade purposes they were often brought to the Indians in graded sizes. Mr J. V. H. Clark mentioned some thus arranged in Pompey. "Mr David Hinsdale found a *nest* of brass kettles, the largest of which would hold two pails full, and the smallest about three pints. They were all bailed, ready for use, and some of the smaller ones were used in Dr Western's family and Mr Hinsdale's family for several years. The larger ones,

being on the outside, were considerably corroded by time and exposure and were unfit for use."—*Clark*, 2:260

Squier mentioned a curious burial around a kettle, which may be credited to the Neutral nation. A large number of skeletons were found together in the town of Black Rock. "They were arranged in a circle, with their heads radiating from a large copper kettle which had been placed in the center and filled with bones. Various implements both of modern and remote date had been placed beside the skeletons."—*Squier*, p. 100

The brass kettles which he describes and figures from the Canadian ossuaries are quite different in some respects from those of New York. The ears and bails project far out from the sides in a very clumsy way and the kettles held from 6 to 16 gallons. As these were undoubtedly French, those of New York may show the prevalent English and Dutch forms in the 17th century.

Metallic pipes

Roger Williams's statement has been given regarding the quickness with which the New England Indians learned to cast metals, even in the form of pipes. Their ability to cast brass may be doubted. When the writer was a child every hunter cast his own bullets, and he has done the same. Bullet molds occur on Iroquois sites 250 years old. Like things were a part of household economy. In the general Bigelow collection is a mold for casting pewter spoons, much in use in pioneer days by those who could not afford silver, then a foreign commodity. Were the old spoons bent and battered? They went into the ladle and mold and came forth in pristine beauty.

Though Hudson said he saw copper pipes in New York in 1609, none of these are known, nor are metallic pipes common. Those found on Indian sites were probably made by white men. Pewter and lead were easily melted; not so iron and brass. So bars of lead were often given to the Indians at treaties and are sometimes found on their village sites. These were mostly used for bullets, but some were formed into rude ornaments, to be noted later. In case of necessity the lead ornament or pipe might take the form of balls for the gun.

Fig. 79 is the bowl of a pewter pipe in the Hildburgh collection, found in Livingston county. The bowl is cylindric and it has a broad and thin rim. Another as broad again, with a wood and copper bowl, is in the same collection, but is almost destroyed. This is from Oneida Valley, whence comes another of the same materials and in fair condition. This has an expanding bowl with raised angles.

Fig. 80 is a slender trumpet-form pipe of brass in the Richmond collection, found on the Briggs farm, town of Mohawk N. Y. Fig. 104 is a large and rude iron pipebowl from the Rose hill farm in Seneca county, on the east bank of Seneca lake. It has a projecting rim and is angular.

Fig. 127 is a curious angular lead pipe in the state museum, with a bold platform projection in front of the top of the bowl. This was obtained by Mr J. S. Twining in Jefferson county. Fig. 130 is a massive pipe of pewter or lead and of simple form, found in the town of Schroeppel, a little north of Oneida river. The edge of the bowl has been battered. Fig. 145 is a fine but short lead pipe, found near the surface of the grave in Fleming where the pewter mug was obtained. Fig. 146 is an equally fine pipe of the same material, found in Rome N. Y. The stem is quite slender.

Fig. 132 is an iron pipe of modern pattern, found in the town of Scipioville. It is partly brazed, and but 5 inches of the long stem remain. Fig. 136 is a fine pewter pipe, found near Mapleton, on the site of Upper Cayuga. Part only of the stem is shown here, but the extreme length of the pipe is $9\frac{1}{2}$ inches.

Fig. 182 is from Oneida Valley and is in the Hildburgh collection. The owner describes it as made of copper, pewter and wood. The form is unique. Fig. 181 is a fine example of a small iron pipe, found in Jefferson county and belonging to Dr Getman. It is well made and preserved, and has a knob at the bottom of the bowl and the end of the stem. The stem is but little longer than the bowl.

Fig. 180 is a reproduction of one sent the writer by Walter C. Wyman of Chicago, and represents an interesting relic of two

prominent men of New York. It is of silver with the simple inscription on the bowl: "Presented by Governor Tompkins to Skenandoah." De Witt Clinton visited the old chief at Oneida in 1810 and said: "He is entirely blind but his hair is not gray. He smokes, and can converse a little in English. He was highly delighted with a silver pipe that was given him by Governor Tompkins." The latter filled his office from 1807 to 1817, and the pipe is now nearly a century old. Mr Wyman said: "The lettering is very much rubbed but is legible. The pipe was obtained with the wampum belt of the Oneida treaties, directly from old Skenandoah, the chief of the Oneidas in Wisconsin, who died three years ago. He was the grandson of the owner of the pipe and was about 90 when he died."

Mr Jeptha R. Simms describes another of these New York silver pipes in the following words:

Oct. 28, 1867, I had a visit from Rev. Robert Jones Roberts, a young English missionary to the Six Nation Indians at Newport, province of Ontario, Canada. He was accompanied by G. H. M. Johnson—On-wan-on-shy-son—one of the principal Indian chiefs of that province, who claimed to obtain his name by descent from Sir William Johnson. . . He carried with him a pipe which had descended through several generations of sachems, and had become among them an evidence to its bearer of his dignified position. On the plate under its stem, next the bowl, was engraved the history of its origin, reading upon the right side, from the mouth, "As a testimony of their sincere esteem;" and on its reverse, "To the Mohawk Indians, from the Nine Partners of the tract near Schoharie, granted in 1769." This pipe is of pure silver and weighs four ounces avoirdupois. It is of goodly proportions, with a bowl 2 inches deep; from which the stem measures 18½ inches. An ornamental plate, perhaps an inch wide, extends 5 inches from the bowl, bearing the inscription above named. From this plate to within 4 inches of the end of the stem, is a small silver chain. On the front of the bowl stand the figures of a white man and an Indian, holding a chain in their right hands; the latter having in his left hand a pipe from which he is smoking. This relic is sacredly treasured among the Indians.—*Simms*, p. 43

Mr Simms gave a good figure of this interesting article. The Schoharie valley belonged to the Mohawks, and the original Nine Partners' great and little patents were in Dutchess county,

and dated in 1697 and 1706. These partners were not the same. Several patents of Otsego and Schoharie lands were made in 1769.

After the above was written the writer figured a fine pewter pipe belonging to Mr Addison Pease of Fleming, and found at that place. It is of a modern form, with ample bowl and in good condition.

More of these might be shown, but they differ little in form, even when combined with wood or stone. Such combinations were frequent. In a paper in the *American antiquarian* for 1879 Mr Edwin A. Barber figured several Dutch and Swiss iron pipes and a rude copper pipe from Pennsylvania. He also quoted a statement about the pipe of Capt. Miles Standish, used by him till his death. It was "a little iron affair of about the size and shape of a common clay pipe." Mr Barber thought this was made in Holland. Those in New York may be over 200 years old. This eminent authority concludes "that we have no positive proof that pipes were in use in Europe before the Columbian discovery of America; but if it can be shown that such was undoubtedly the case, it is reasonably certain that such objects were employed in medicinal remedies or for purposes of fumigation."

It was customary to present large quantities of pipes at Indian councils. Among the presents in 1696 were "1 grose of tobacco pipes, wood & tinn," and sometimes casks of pipes were given. The study of European pipes used by the Indians of New York has proved of much interest. They came in at quite an early day.

Trade axes

One of the earliest iron implements that found its way into the interior of New York is known as the trade ax. It usually has a broad edge for cutting, but is narrow below the socket for the handle. This was made by bending over the upper part of the flat iron plate, forming an elliptic opening. They are of all sizes, and quite frequently are stamped with three circles, each inclosing a cross. Sometimes the cross has a sec-

ond bar. The circles vary from one to three, never exceeding the latter number. Many are unstamped. They occur in large numbers in some parts of Canada and New York. Hundreds have been found on Cazenovia creek in Erie county. Large numbers on Cattaraugus creek, near the lake, kept the early blacksmiths supplied with good material, and Mr Obed Edson recorded large finds in Erie and Chautauqua counties. Several hundred pounds of these were found on M. B. Crooks's farm, 2 miles from East Aurora. Miles Bristol paid for two years tillage of his orchard lot with the axes he found at the village of Lima. In another place enough of these were obtained to equip an early sawmill, and Cayuga, Madison, Onondaga and Ontario counties have been equally prolific. After a century's gathering the crop is not exhausted. Squier said of these: "Thousands are found in the western counties of the state."

Their early introduction has been already noted, Champlain seeing them here in 1609. One or two have been found near the prehistoric fort in the town of Minden, but not of late years at least within the wall. Squier said that brass kettles and European articles were found inside the bank, but this is usually thought an error. In another place the evidence is clearer, and fig. 87 is probably one of the oldest to which a date can be given. It is 7 inches long and is stamped with two circles of unusual character. The cross is not of the common type, and there are very small circles in three angles of the limbs. This is in a collection at Cazenovia N. Y. with another much larger, and regarding both Mr J. T. E. Burr writes: "The iron axes are from the fort on the Nichols farm, on the Mile Strip in Fenner. I know when they were found, and assure you they are genuine and properly located." The larger one is 8 inches long, with a cutting edge of $4\frac{1}{2}$ inches. It has three circles close together but each cross has a double bar. The socket is bent and broken.

It is probable these were used in the siege of the Oneida fort in 1615 but whether they were brought by Champlain's Indians or already owned by the Oneidas is conjectural. The

latter removed their town soon after, and when Corlaer visited them in December, 1634, a chief told him that "the Frenchmen had come thither to trade with six men, and had given him good gifts, because they had been trading in this river with six men in the month of August of this year. We saw very good axes to cut the underwood." They saw razors also.

In this case it is quite probable that by the river they meant the St Lawrence, rather than any stream in the country of the Oneidas. It was easy to misunderstand.

In the pictures accompanying the account of the nine Iroquois tribes or clans in 1666, the Turtle and the Beaver carry the typical trade ax, but the Eagle has a hatchet expanding equally on each side. Wooden clubs were at first called tomahawks, but after a time axes were known by this name. Taking up and laying down the hatchet became terms for war and peace, modified to suit the occasion. According to Colden the expression was enforced by acts at times. He relates the proceedings at a council in Albany in 1684. Speeches and explanations had been made to avert hostilities. "Then the axes were buried in the southeast end of the courtyard, and the Indians threw the earth upon them." The council was really held in 1681.

When war was unsuccessful the Indians said the ax was poor or broken, and some battles have been known by this name. Axes were figured on or attached to war belts. In 1692 Tataconicere, an Oneida at a French mission post in Canada, learned that the wife of the Onondaga chief, Black Kettle, was trying to escape. He at once killed her, and "struck his hatchet into the gate as a sign that he would not grant pardon to any one." Old documents and speeches are full of these symbolic uses.

In his camp at Onondaga lake, July 2, 1756, Sir William Johnson made a remarkable speech of this kind to the Indians assembled there. He had advised them to return the French hatchet and had sharpened their own by a belt. To this they had made a suitable response and waited his further pleasure. He said:

Brethren—two days ago you returned me thanks for sharpening your own Hatchet and said you had found mine last year at Oswego was not good. I told you then that I had some weapons

with me that were sharp likewise if properly made use of and I hope you will make use of them vigorously and our common enemy As your Hatchet is now sharp. I likewise sharpen your knife to cut our enemys throats or take their scalps off, and as I know it is an old custom amongst you to feast on your enemies flesh I present you those Kettles for that purpose. [This is meant figuratively, and some Meat is boiled in the Kettles, which they eat and call it French Mens Flesh, so when drink is given it is called blood of their enemies.]—*O'Callaghan*, 7:149

There was much profit in selling these implements. La Salle gave an account of trade at Fort Frontenac in 1684, with general demands, cost and profit. He wanted 1000 axes, which would cost 7 or 8 sous a pound and would sell for 30 sous apiece. They were prized as presents and Schuyler gave the Iroquois 300 hatchets in 1708. Metallic implements made blacksmiths necessary to the Indians and it became a matter of political importance whether the blacksmith was English or French. Old anvils have been found on village sites, the possession of which was matter for stratagem or debate two centuries ago. A few words on this may be of interest.

As the Iroquois increased their use of guns, axes and kettles, they more and more required the aid of smiths. The Mohawks could go to the white settlements, but this was too long a journey for the others. So, at a council in Albany in 1691, they renewed a previous request, saying: "We did formerly desire that we might have a Smith at Onnondage, whereupon a young Man that was a Smith by Trade, was sent us, and we gave him 20 Beavers for his encouragement to stay, but is gone away; again we request that we may have a Smith to mend our Arms, it being somewhat dangerous to come downe for every trifle hither, & we desire also that the Smiths here may in the meantime work as cheape as they did formerly."—*O'Callaghan*, 3:775

On behalf of all in 1692, Oheda, an Oneida chief, said, "We desire the blacksmith's Anvill that is at Onondage may remain there, and that there may be a Smith permitted to goe and live there for the mending of our arms, and not to goe away againe so soon as they have Traded, as the other Smith did."—*O'Callaghan*, 3:844

This may have produced but little effect, and, Feb. 25, 1693, the Onondaga speaker said to Gov. Fletcher: "Wee desire that yo^{r} Excellency would be pleased to ord^{r} a Smith to bee with us in o^{r} country to repair our armes that wee may defend ourselves against the French." Fletcher replied: "I doe grant yo^{r} request of a Smith, and will order one to live in yo^{r} country to repair yo^{r} armes."—*O'Callaghan*, 4:23

He was not so swift as his Indian name implied and they renewed their request July 4, 1693, with an addition. "Wee begge of you to lett us have a Smith & a gunn stock maker in our Castle to mend our armes when they are broaken."—*O'Callaghan*, 4:43.

In 1700 the French offered to furnish smiths to mend their axes and guns. Some years later this led to a conflict of interests in the Iroquois capital, concerning which Father Jacques d'Heu wrote from Onondaga, May 24, 1708:

The English blacksmith has returned after nine months absence. On his arrival those of the French party were not willing to give him the anvil which belongs to them, and concealed it at my house and requested that a smith be sent from Montreal. That matter, I told them, would be discussed on M. de Joncaire's arrival. It seems to me that it would be very important for the good of religion and the French Colony, were there a French blacksmith here; the Englishman would then decamp. But this Blacksmith should be under the Black Gown and an exemplary man. One Donné would be our man, but I see no prospect of him. The anvil was given to the English blacksmith, because those of the English party were beginning to mutiny. But I'm told that if a Blacksmith came from Montreal he would get at once the anvil and all the tools belonging to those of the French party.—*O'Callaghan*, 9:816

There were afterward French smiths among the Senecas, but they did not remain long. It became a part of the New York policy to see that a reasonable number of its own blacksmiths were provided. Seldom have they been of such political importance.

In 1742 it cost £21 7½d to set up the bellows, anvil and vise at Cayuga, of which New York bore the cost. So it was proposed to the colonies of New York, Massachusetts and Connecticut, in

October 1747, "that a gunsmith be sent to each of the tribes following, viz: The Oneidas, Onondagas, Cayugas and Senecas, and two men with each gunsmith, to continue until next spring, and that goods valued at £360, New York currency, be sent with them."

In the laws of the colony of New York mention is frequently made of these blacksmiths. By order Cornelius Van Slyck jr and company resided in the Seneca country, Sep. 1, 1741, to Sep. 1, 1742, mending arms, etc. to prevent French plotting. About the same time Peter Lansing and Barent Staats jr were four months in the Cayuga country on the same business. In 1745 Garrit H. Veeder, the Cayuga blacksmith, was paid £60, with something for sundries. Ryer Booen went to Onondaga with goods, two men and a gunsmith, and was there from November 1747 to May 1748.

Hendrick Herkemer, gunsmith at Onondaga, with two helpers and materials, was paid £70 for services from October 1748 to May 1749. The Seneca blacksmith had the same. It was customary to spend about six months in this service. Others are mentioned but it will suffice to speak of William Printup, blacksmith at Onondaga in 1750. He was a favorite there for some years and his name is still borne at that place.

This matter receives special attention here because it has been customary to speak of the anvils and blacksmith's tools which have been found as French. Few or none of them were. The Onondaga anvil, which Father d'Heu said belonged to the French party, the Onondagas asked permission of the English to retain but a few years before. The latter had furnished it and a smith. In the Seneca country alone did French smiths work, as far as records go, and that but for a short time. It is probable one may have been with the French colony at Onondaga lake in 1756 but there is no clear proof of this.

The Iroquois were not willing their dependents should have equal advantages with them. In 1750 the Shawnees and Nanticokes wished a smith at Wyoming, as well as at Shamokin Pa. and sent their request by Cammerhoff and Zeisberger. The Onondagas positively refused this.

When we consider the great quantities of axes that the English and Dutch both sold and gave to the Iroquois, and the universal prevalence in early years of the form known as the French trade ax, we are led to believe that all were not French, but that this was the common European form two or three centuries ago, as it is in Germany yet. A large proportion, at least, seem to have been made at Utrecht. In any case most of the iron axes found on New York Indian sites passed through the hands of its colonists.

Fig. 8 is much reduced and has one unique feature. While having nearly the common outline, a sharp spike rises from the upper edge, $1\frac{1}{4}$ inches high, giving a height of $6\frac{1}{2}$ inches to this corroded implement. It was found at Rome N. Y. and may be dated about the middle of the 18th century.

Fig. 99 is a large and typical trade ax from Pompey, unusually wide for its length. It has the frequent three crosses and is very heavy. The figure is much reduced, the implement being $8\frac{1}{4}$ inches long. This ax is in the Skaneateles library. Fig. 98 is a very large and peculiar ax, also much reduced, the actual length being $10\frac{3}{8}$ inches. The lateral edges of the blade are now parallel, but the posterior may have been cut or ground down. The three crosses give weight to this supposition. In its present condition it is unique. It is in the Cazenovia library and was found at Nelson Flats, Madison co. as well as the following two.

Fig. 167 is the reduced form of a typical trade ax, with one unique feature. The two circles each inclose eight lines radiating from the center, instead of the cross. It is $7\frac{1}{4}$ inches long with a blade nearly 4 inches wide. Fig. 168 is similar but larger, the extreme length being $8\frac{1}{4}$ inches and the greatest width 4 inches. The three circles on each side each inclose a double cross. Both these show one characteristic feature of these early axes, the angular indentation of the outline below the socket. Quite a number have been found in the town of Nelson.

Fig. 90 is a curious ax in the Bigelow collection, which was found at Jack Reef on the Seneca river. It shows signs of long use, and was evidently once longer, but its most singular feature is a large rectangular perforation through the lower

part. The posterior portion inclosing the socket is like some modern forms. The iron is much corroded.

Fig. 116 is a reduced drawing of an iron ax belonging to the Johnstown historical society, and which was cast or forged in one piece. The slender iron handle was evidently intended to be inserted in one of wood. It is said to have been found 8 feet underground at Johnstown N. Y. and the general form is quite modern. The head is $3\frac{7}{8}$ inches from top to bottom and the length through the handle is $9\frac{3}{8}$ inches.

Fig. 89 is another of these solid forms, of what may be called a tomahawk pattern. It has a slender projection like the last, for insertion in a wooden handle, and a sharp spike once protruded in front. The upper part terminates in a long and curved point. It is quite thin, and was found at Fort Bull near Rome N. Y. The length was 10 inches and it now measures $8\frac{1}{2}$ inches from the curved tip to the front angle of the cutting edge.

Fig. 102 is from the same place and of actual size. The cutting edge has been a little broken. This tomahawk is much like some of our present hatchets, but less angular. It is rather a frequent form. By degrees tomahawks took more slender, and even graceful shapes. Fig. 97 is a reduced representation of a very common kind. The maker's initials, J. G., are on both sides, and are shown in the drawing. Otherwise the surface is plain. This is owned by Wilson Johnson, on the Onondaga reservation and is $8\frac{1}{2}$ inches long.

Fig. 101 is a slender tomahawk, as long above the handle as below. The upper part is much curved and sharply pointed. This is in the Bigelow collection and came from Jack Reef on the Seneca river. It is one of the most frequent forms and its extreme length is $8\frac{1}{4}$ inches.

Fig. 91 is a small iron tomahawk from Union Springs which approaches the pipe tomahawk form. Almost every variety of iron ax is represented there. Fig. 77 is a small iron hatchet from Fort Plain, and is quite unlike most others. It is in the Richmond collection.

Fig. 100 is a fine and slender steel tomahawk, with a pipe-bowl, which belongs to Mr George Slocum of East Onondaga. He had it from an old Indian who said it was used in the war of 1812.

Fig. 92 is from a half size drawing of a pipe tomahawk by Mr R. A. Grider. It is from the Bellinger farm, near Middleburg, Schoharie co. The handle is hollow and on it are 19 groups of three lines each which Mr Grider thought represented 19 scalps. They are quite as likely to have been purely ornamental.

Fig. 93 is a pipe tomahawk of unusual form, the handle of which is handsomely inlaid. The total length is $12\frac{3}{4}$ inches and the part represented is of actual size. It is said to have been given by an Indian woman to Mrs Thomas Dixon of Jamesville N. Y. about 1800.

Fig. 94 is a pewter tomahawk pipe found on Edward Black's farm, east of Onondaga lake and south of Liverpool N. Y. It has many moldings, and is slightly ornamented with dots. This would do very well for smoking and might have some slight value in war.

Fig. 95 is another tomahawk pipe from Stone Arabia, of the same material and neatly made. This is in the Richmond collection.

Fig. 88 is in the same cabinet, and came from Canada, but is no finer than many in New York. It is a brass pipe tomahawk, edged with steel and handsomely ornamented. Pipes of the same character may still be seen on the New York reservations, and many historical societies have good examples.

Fig. 96 is not so common and is much reduced here. It is a tomahawk pipe belonging to Cornelius Johnson of the Onondaga reservation. From the top of the bowl to the extreme point directly below is $10\frac{1}{2}$ inches. Below the handle it has the form of a double-edged dagger, widest in the middle. The handle is adorned with brass nails and is finished with a brass knob in front.

Fig. 179 is a curious steel tomahawk in Mr William Lounsberry's collection at Tioga Center, but found on the north side

of the river. The peculiarity is in a sharp projection at the top and toward the handle. About Owego and along the Susquehanna above that point, iron axes and tomahawks frequently occur. Mr A. F. Barrott has one from Owego of the general trade form, but angular above instead of rounded, which is probably of a later type. Dr A. D. Gould has a pipe tomahawk from Willow Point, and others have been found.

Among the many tomahawks to be seen at Owego and vicinity is one belonging to Mr T. B. Reddish, which came from Middleburg, Schoharie co., where there were Indian forts and villages in the 18th century. This has a broad cutting edge, the implement being narrow at the socket and terminating in the long curved point above. On the expanded surface of the socket are the figures 1711. It is the only one reported with a date, except one from Pompey, dated in 1715.

Another Owego ax resembles the trade form, but has a neat scroll pattern indented in the sides. It is probably more recent than the form would indicate, though many pipe tomahawks do little more than add the pipe to this early form. In some of these, at least, the pipe bowl is formed separately and fixed by a screw.

Knives

It is surprising to see what delicate and beautiful work our aborigines did with their simple implements of bone and stone, but they were not slow to see the advantages of metallic tools and gave an appropriate name to their makers. A simple steel knife had a value to them of which we can faintly conceive. Fancy a white boy in the country without a knife! What wonderful things captives have been able to accomplish with one. It is almost the foundation of all civilized skill.

One early practice is commonly associated in our minds with the knife in the savage life of this land. It is that of scalping the dead. Fairly understood it has a different character from what many suppose, being the simple attestation or record of the warrior's prowess. It was not cruel, for no man intended to scalp the living. It was not intended as a savage mutilation, but to

secure proof of what had been actually done. It silenced the mere braggart, who had no scalps to show. Hideous as they seem to us, these were to the Indian what stars, crosses, and honorable medals are to the European soldier. Granting its savage features it was the plainest record in a savage state.

The white man changed this. The honorable distinction became a source of gain. A price was placed on scalps, and men and women were killed for money. Fame and distinction became of less value than mercenary returns, for the white man paid for scalps and beaver skins as kindred commodities. Of this the red man had not before thought.

The French paid scarcely $6 for men's scalps, but King Louis thought they must economize in this. In 1694 he wrote to Frontenac and Champigny, then in Canada, that "His Majesty desires that they conform themselves to the order he gave them last year, to cease paying the Christian Indians 10 silver écus for every Indian killed, 20 écus for each prisoner, and half these sums for women; this will be a further diminution of the estimate. This expense can not be afforded."—*O'Callaghan*, 9:573

The New York colonists acted independently and more liberally or else the general price had advanced in half a century. Under date of May 7, 1747, Col. Johnson wrote to Gov. Clinton: "We shall soon have abundance of prisoners and scalps, wherefore will require a great deal of money, which they expect will be ready here at their return. I have paid the first who came home £60 for the six scalps brought from Crown Point which I could not avoid, and when the rest come in I must do the same, for they look to none else for it & must have it, as they say, punctually paid according to promise."—*O'Callaghan*, 6:361

Many quotations might be made illustrating this subject. Whether bounties were paid by either side during the revolutionary war does not clearly appear, though it is probable. The noted account of scalps taken by the Senecas, published in 1782, was long believed but is now known to have been written by Dr Franklin for political purposes. It has yet a certain value as being a good description of how scalps were stretched, dried and painted.

One of the great medicines of the Iroquois is connected with a traditional scalping incident and a great Huron feast was founded on the same story. The owl and the wolf meet, and the coming of the Ontarraoura is predicted. This animal seems to be the panther, or mountain lion, and to him the resuscitation of the good hunter is ascribed. In the New York story the good hunter loses his life and scalp. After many trials a bird brings the scalp back, but it is so dry it will not fit. At last the eagle suggests softening it with the mountain dew which has collected between its shoulders. The scalp becomes pliable, is fitted to its place, and the good hunter lives again, to the great joy of bird and beast. In this the presence or absence of the scalp becomes synonymous with life and death.—*Beauchamp*

In general there is nothing to distinguish the scalping from the hunting knife, but nearly all are pointed. Some were supplied ready for use; in other cases the handling seems to have been left to the sons of the forest. They were sold or given as presents by Dutch, English and French, and were of many forms and sizes. Illustrations will be given of a few of these but from their thinness most have perished.

The Dutch so soon began a spirited Indian trade that the French could do little in New York, except among the Senecas. Knives were among the smaller articles which La Salle wanted at Fort Frontenac in 1684, but in 1708 M. de Longueuil reported that Schuyler had given the Iroquois 800 knives. At the siege of Detroit in 1712 the French Indians were given 190 butcher knives, to be used as bayonets. These may have been the long carving knives here shown.

Among the presents to the Iroquois at Albany July 3, 1693, were 87 hatchets and four gross of knives; and among those recommended the next year were "2. Grose of Knives black hafted sharpe points." They were an ordinary article of trade besides. Hence we may conclude that most of those found in New York were of Dutch or English make. During the period of the French missions here, French articles were quite freely used, but before and after the supply was small. This is not

quite in accordance with prevalent opinion, but the proof is clear. West of Onondaga the French for awhile had a better chance. The question is one of interest but can be treated better in speaking of ornaments.

Fig. 106 was found in the town of Venice N. Y. in September 1887. It has a well preserved bone handle of European make and the total length is 8½ inches. All the illustrations on this plate are reduced. Fig. 107 is quite like the last, but the bone handle is differently ornamented. It is in fine condition and was found at Scipioville in 1886. It is a trifle longer than the last, the point having been less ground. Fig. 109 is from Fleming in the same county and has a horn handle, possibly of Indian make. The form differs from the last two, and it saw more use. The full length is 9 inches.

Fig. 110 is an iron knife in the Vail collection, found in the fort south of Pompey Center, with several others. This is a relic of the early Dutch trade, no distinctly French articles being found on this site. The handle is gone but the usual tang for hafting remains. The full length is 6¾ inches. Fig. 112 is from the same place, differing only in length, which is 9 inches.

Fig. 122 is a much corroded knife from Pompey, belonging to the writer. It is wider than usual. Fig. 105 was found at East Cayuga in 1888 and is more suggestive of a typical scalping knife than most others. The rude handle is of horn, probably made by the Indian owner. Fig. 118 is much reduced. This knife is said to have been used in war, and was given to Albert Cusick by another old Onondaga Indian. The blade is sharp, slender and curved, and the wooden handle well preserved. The full length is 15 inches.

Fig. 114 is almost unique, but there is another smaller one like it from an adjoining site. Both are from Fleming and were found in 1887. In this one but a small part of the iron blade remains. The handle is of brass and shows two Flemish lovers in an affectionate attitude.

Two very remarkable French knives are drawn from photographs furnished by Mr W. W. Henderson of Jamestown N. Y. In the illustrations they are much reduced from the full size. Under date of July 1, 1887, Mr Henderson wrote:

The knives were found in gravel, below the base of an artificial mound erected on a high ridge, through which a roadway had been cut, removing half the mound, and leaving the roadbed 10 feet below the base of mound, as first discovered by early settlers. In excavating for the roadway the knives and bones no doubt slid down from a point above in the body of the mound. The apex of the mound is at present 15 feet or more above the roadbed. It is thought De Celeron with his large company of French and Indians camped near this spot in 1749, and long previous to this date the natives of this locality no doubt had intercourse and traffic with the French in Canada. . . The above mentioned mound is near Jamestown and the knives were taken from it April 1887. They bear the words "Lempier—Rue St Honore—34. ☞ a Paris."

In a letter dated May 10, 1901, Mr Henderson corrected this statement:

Two steel French knives, 12 inches in length of blade, one 2 inches in width at the handle and the other 1½ inches, bearing the trademark "Sabatier, Rue St Honore, 84, A Paris," were found with a human skeleton in removing a large mound from highway near Fluvanna. They were doubtless obtained by the Senecas from the French in Canada by traffic or stealth, or were intrusively buried in this mound with some deceased French hunter.

Fig. 169 shows the narrowest of these knives, the trademark being on the opposite side. It is 1½ inches wide at the handle and 12 inches in length thence to the point. Fig. 170 is 2 inches wide at the handle with a blade 11 inches long. They are like the common carving knife and suggest the butcher knives to be used as bayonets.

Fig. 72 is a large, flat and angular knife, made from a brass kettle, and found near Beaver lake, Lysander. Grooves and notches have been filed near the base, for secure attachment to the handle. Iron knives were so abundant that a makeshift like this is rare.

Fig. 178 is a remarkable recent copper knife of moderate thickness, found by Mr Luke Fitch on Indian hill, Pompey. The form is that of a shoemaker's knife, and it has a tang for insertion. Iron knives are frequent there but this is the only copper one the writer has seen.

Miscellaneous

Prefatory to an account of a few miscellaneous metallic objects found on Indian sites, it may be well to mention some of those of all kinds on which duties were imposed in New York in 1686, and which were intended for Indian trade. Most of these have the word "Indian" prefixed.

They were Indian duffels, strouds, blankets, plain cottons, half thicks, white Olembriggs, kettles, hatchets, hoes, red lead, vermilion, cotton, red kerseys, knives, shirts, shot, woolen stockings, Indian haberdashery, drawing knives, looking-glasses, wooden combs, beads, tobacco in roll, belts, scissors, jew's-harps, Indian paints, drills, tobacco boxes, Tinsie lace, gimp lace, needles, tobacco tongs, powder horns, Indian heales (steels). In the law of 1692 white osend cloth takes the place of white Olembriggs, and in that of 1699 it reads white Ozenbrugs Mellish. Both have bells instead of belts, and this is probably correct. Guns with all their parts afterward appeared among treaty presents, adzes, shears and toys, powder and ball, bars of lead, gun flints, shoes with and without buckles, hats, fans, articles of shell, laced coats and hats, red coats, jackknives, garters, tomahawks in 1714, silver medals, added to a large trade in ornaments of silver and brass.

Peter Stuyvesant wrote to the duke of York on behalf of the Dutch inhabitants, in 1667, in regard to this trade:

Since the Trade of Beaver, (the most desirable comodity for Europe) hath allwayes been purchased from the Indyans, by the Comodities brought from Holland as Camper, Duffles, Hatchetts, and other Iron worke made at Utrick &c much esteemed of by the Natives, It is to be fear'd that if those Comodities should fail them, the very Trade itself would fall, and that the ffrench of Canida, who are now incroach'd to be too neare Neighbours unto us (as but halfe a days journey from the Mohawkes) making use of their Necessities and supplying them, they will in time totally divert the Beaver Trade, and then the miserable consequences that will ensue, wee shall not have one shipp from Europe to trade with us.—*O'Callaghan,* 3:164

On this general question of use and supply the liberty is taken of quoting part of a letter from Mr S. L. Frey on recent articles

found in the Mohawk valley. Some of it may be irrelevant, but no more appropriate place may be found for it:

In the modern sites there is found a great variety of traders' iron and copper work. I have some; principally iron axes, hoes, padlocks, jew's harps, thimbles, knives—some made from files, cold chisels, steels, etc. Copper kettles are found in graves, as well as ornaments of copper. I have but a few. Venetian beads are in great variety. Nails, buckles, and horse shoes are found; also hinges, gun locks and barrels. Every digger has some novelty. Most of the iron axes found here, marked with one, two and three crosses, were made at Utrecht for the Indian trade. The white clay pipes marked R. T., E. B., and others, are English, while some others are Dutch. They were given to the Indians by thousands. Grès de Flanders ware was brought in small quantities by the traders. I have one jug from a grave, and I know of one other with the arms of the city of Amsterdam on it. There is a curious white earthen vessel in the Richmond collection, from a grave, and I have heard of a few other pieces of earthenware. Bottles are singularly scarce. I know of one "apostle spoon." I never heard of a single steel trap being found. English gun flints are not uncommon. A rum bottle with W. J. impressed (said by the finder to mean William Johnson) came from the site of the Jogues shrine.

The writer again calls attention to the fact that the so called French axes were most of them made in the Netherlands. It is quite the fashion in the interior of New York to call any early European remains French and there are several nominal French forts where none ever stood. Articles of a religious character mostly came from that nation.

Steel traps were commonly used at a distance from the towns and were not likely to be lost at home. The writer has found but one small one on an Indian site. This may be recent, but seems antique. Bottles are rare and may have been little used. The Indian did not drink while hunting, but emptied the keg at village feasts. Cups were used then, and several silver ones have been found.

The above summary does not include everything furnished in the Indian trade, but no one who reads it will be surprised to find any article of the period on any Indian site later than the middle of the 17th century. It was a simple question of

use, taste and ready supply. No durable article mentioned above has failed to appear in one place or another while the list might be much extended. The Indians used compasses for laying out geometric figures, and the writer has seen a hammer stone, with circles and an inscribed star, which was found in an Indian fireplace. Thimbles, locks and keys, bars of lead, buckles, sword hilts, large and small vises, pewter platters, spikes, trammel hooks, handsaws, anvils, cannon balls, horseshoes, hammers, files, hoes, steels for striking fire, are among the articles found. Mr J. V. H. Clark says of the northern part of Pompey: "Wagon loads of old iron have been taken from these grounds."

Fig. 108 is a fine and curious steel chisel from Pompey which was in the Ledyard collection. The edge is good and there are two long and deep grooves above this, one above the other, reaching about half way of the long and slender implement. The edges are chamfered near the base.

Fig. 76 may be called an iron chisel. It is quite broad for its length, which is $4\frac{1}{2}$ inches including the broad tang. It was found in Fleming in 1887 and is much corroded.

Fig. 126 is a quadrangular steel celt, found on lot 53, southeast of Pompey Center. All other remains known to the writer there are prehistoric, but the fort of 1640 is about a mile west of where this was found. It is a fine and unusual article.

Fig. 124 is an iron awl from the fort just mentioned. It is corroded, but sharp and somewhat curved. Fig. 125, from the same place, is much like the last, but smaller. Some of the old Onondagas yet have similar ones in bone handles. Fig. 154 is from the same place, and is of the same general character. They are frequent there.

Fig. 81 is in the Hildburgh collection and came from Ontario county. It is long, flat and sharp, and might be called an awl, but Mr Hildburgh considers it a brass arrow or spear head. In either case it is an unusual form.

Fig. 161 is a slender, flat and curved copper awl from Indian hill, Pompey, where many have been found. It has the appearance of being cast.

Fig. 123 is an iron spike found by Seneca river, in Lysander. It is cylindric, long and slender, with a narrow base, and is not a rare form.

Fig. 64 is a long iron spear, greatly reduced in the illustration, the full length being 8½ inches. This was found in the town of Oakfield, and belongs to C. F. Moseley, of Bergen N. Y. The triangular base has a triangular perforation, and the other end forms a spearhead, occupying two fifths of the entire length.

Fig. 119 is a spearhead at the end of a very long shank. It is of iron and was found 2 miles west of Canajoharie. Fig. 121 has the same general form but the shank is but about half the length of the last. This was found at Indian Castle north of Watervale. The form is frequent and widespread.

Fig. 115 is an iron spearhead, much like a double bladed knife or dagger. It is leaf-shaped and has a tang. This is from the fort south of Pompey Center, where several have been found. It seems much rarer elsewhere. Fig. 120 is much like the last, but the blade is less than half the entire length. It was found in 1885 at Cross lake.

Fig. 185 is a cylindric piece of copper, hammered down to a broad edge at one end. This is from Indian hill, Pompey.

Fig. 69 is an old steel for striking fire with flint and tinder, which belongs to William Isaacs of the Onondaga reservation. This was the national emblem of the Mohawks and rude drawings of it may sometimes be seen attached to old treaties. The Mohawks probably got the flint and steel soon after coming to New York, if not while still in Canada. Their own name referred to this as far back as it can be traced, and they came in contact with the whites first of all the Iroquois. The early Norsemen used the same form of steel. Many forms occur.

Fragments of brass kettles were utilized for tools and ornaments. Fig. 18 shows such a fragment notched for a saw. Fig. 135 is a much larger piece, one edge of which is merely regularly cleft with a knife for the same purpose. It was found by the writer on the recent site near Wagner's hollow, in Montgomery county.

Fig. 165 is a slender copper fishhook from the recent site known as Upper Cayuga, on lot 114, Ledyard. There were many of these there and at Scipioville. Fig. 166 is a large iron fishhook from Scipioville, where several were found. This one has the line still wound around the shank, where it was preserved by iron rust.

Fig. 162 is a pewter mug from a grave at East Cayuga site, lot 95, Fleming. In the mug were 44 French coins, dated from 1642 to 1656, and mostly having two holes for suspension. All were of copper, about the size of our half cents but thinner. This mug was found by and still belongs to Mr John Perkins.

Fig. 15 is a bullet as it came from the mold, found at Indian Castle, north of Watervale. Musket balls often occur in good condition, ready for use but unfinished. The writer has figured bullet molds from the same place.

Two immense iron hoes were found at Fort Bull near Rome N. Y. One of them was $7\frac{3}{4}$ inches broad by 7 inches deep with an ample socket for the wooden handle. On the Cattaraugus reservation may still be seen similar great hoes which the Senecas say were presents from Washington.

Tobacco boxes were commonly changed into paint boxes and receptacles for ornaments. One of these, filled with trinkets, was found in a grave $2\frac{1}{2}$ miles west of Fort Plain. They often occur in graves, placed there when it was the fashion to inter articles with the dead. This one was nearly 3 inches across.

Mr W. W. Adams took out of one Cayuga grave the following articles, May 2, 1888: One brass kettle, 17 flints, two gunflints, six bullets, six long shell beads, a bone harpoon, three buckhorn handles, a knife with buckhorn handle, 21 gaming flints, three bars of lead, five rubbing stones, 16 bears tusks, two axes, two pairs of shears, four pairs of bullet molds, two gunlocks with flints, 47 pieces of gunlocks, 32 knives and cutting implements, two large iron shears, a gun 4 feet 8 inches long, a pipe, a piece of black paint, a piece of mica, two trigger guards, one wormer, a gun cleaner, steel and two flints, a quantity of

powder in a cloth bag, two melting ladles and 2500 wampum beads. There were also some Jesuit bronze rings.

Though this is a great quantity from one grave, attesting the dignity or wealth of the inmate, some others probably exceeded this in value when silver ornaments lavishly adorned the dead. Nothing was too good if they were really loved. The above list is curious in showing the contemporaneous use of many things.

In describing the foregoing articles the writer has not forgotten that only those of native copper can be strictly called aboriginal, but the later ones illustrated or mentioned were used by men still in their savage state, and in their own wild way. They were features of Indian life here for two centuries, and to understand that life we must know something of what was in daily use. It has been deemed sufficient to merely mention many things. Guns and all that appertain to them have been omitted. Jew's-harps needed no illustration, unless of a plumed and painted warrior playing on one. Thus many things are omitted in the figures given as being well known in a general way, while prominence has been given to others of prehistoric age. Nearly half the figures are of native copper articles and references are made to very many more. By far the larger part of these have been found east of Cayuga lake, and north of the southern watershed of the Mohawk valley. West of the Genesee river and in the southeast part of the state few have been reported. This may be the result of several causes now left without discussion.

The subject of metallic ornaments is left for another paper, though incidental reference has been made to them in this. They were very few in this state in prehistoric times, for readier and more showy materials were found. Copper implements were more in demand, for their toughness and durability recommended them, even when stone could be more easily wrought. They reveal trade and travel, and a skill of no mean order in working with primitive tools.

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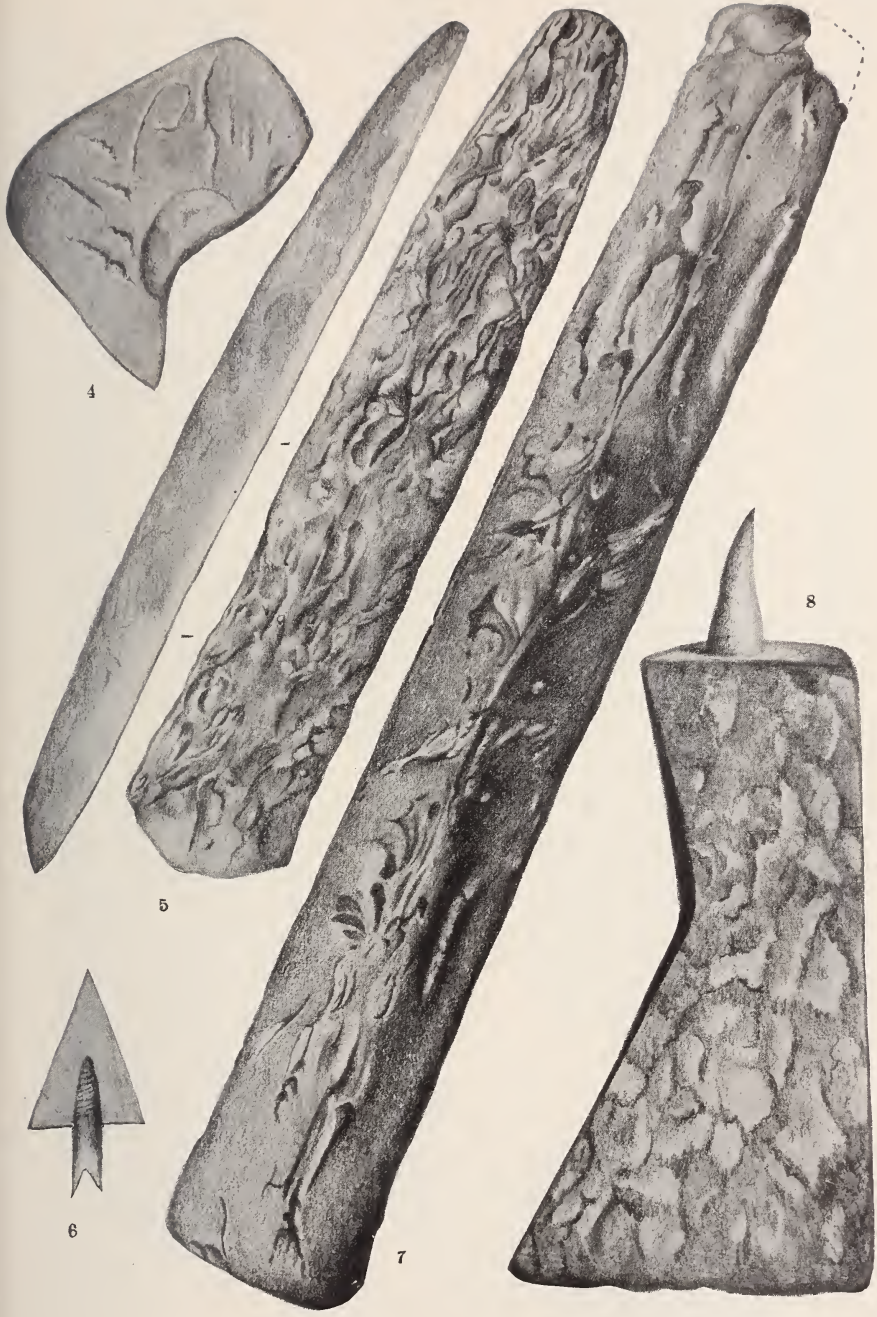
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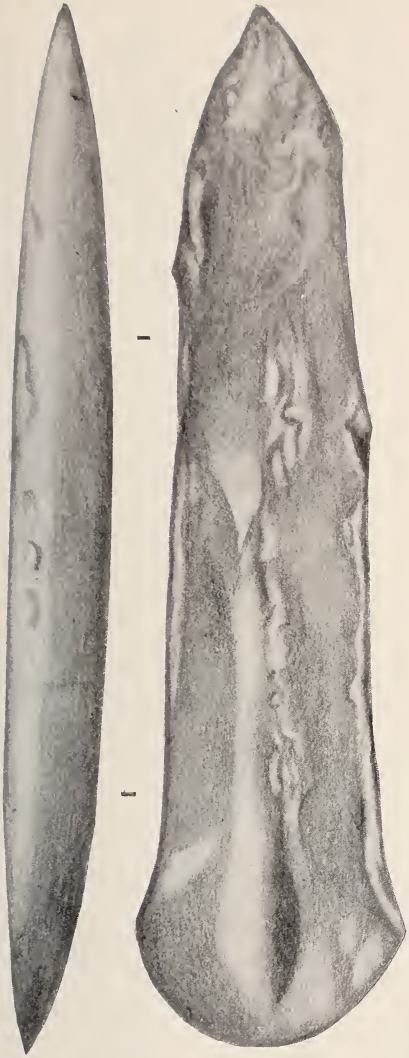

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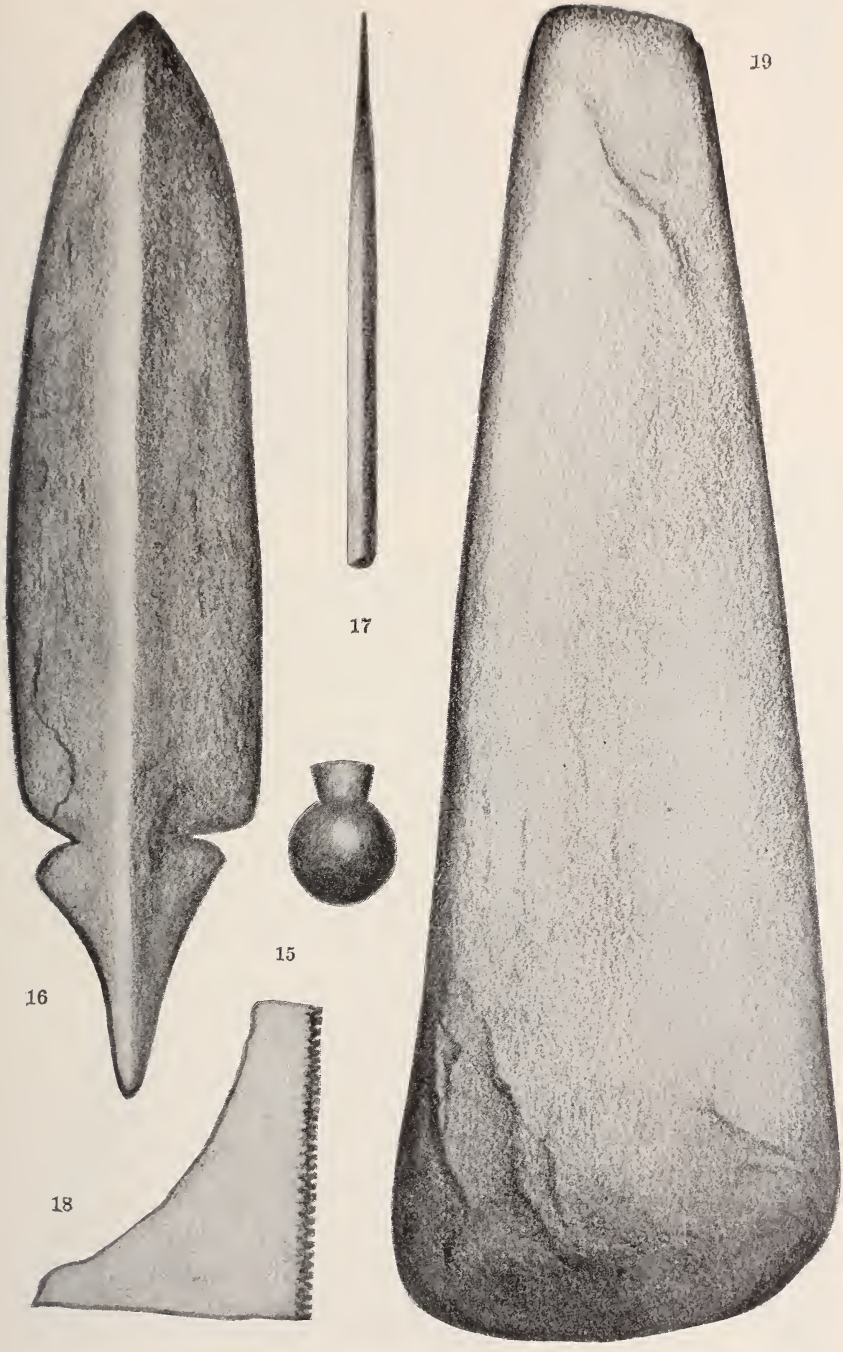
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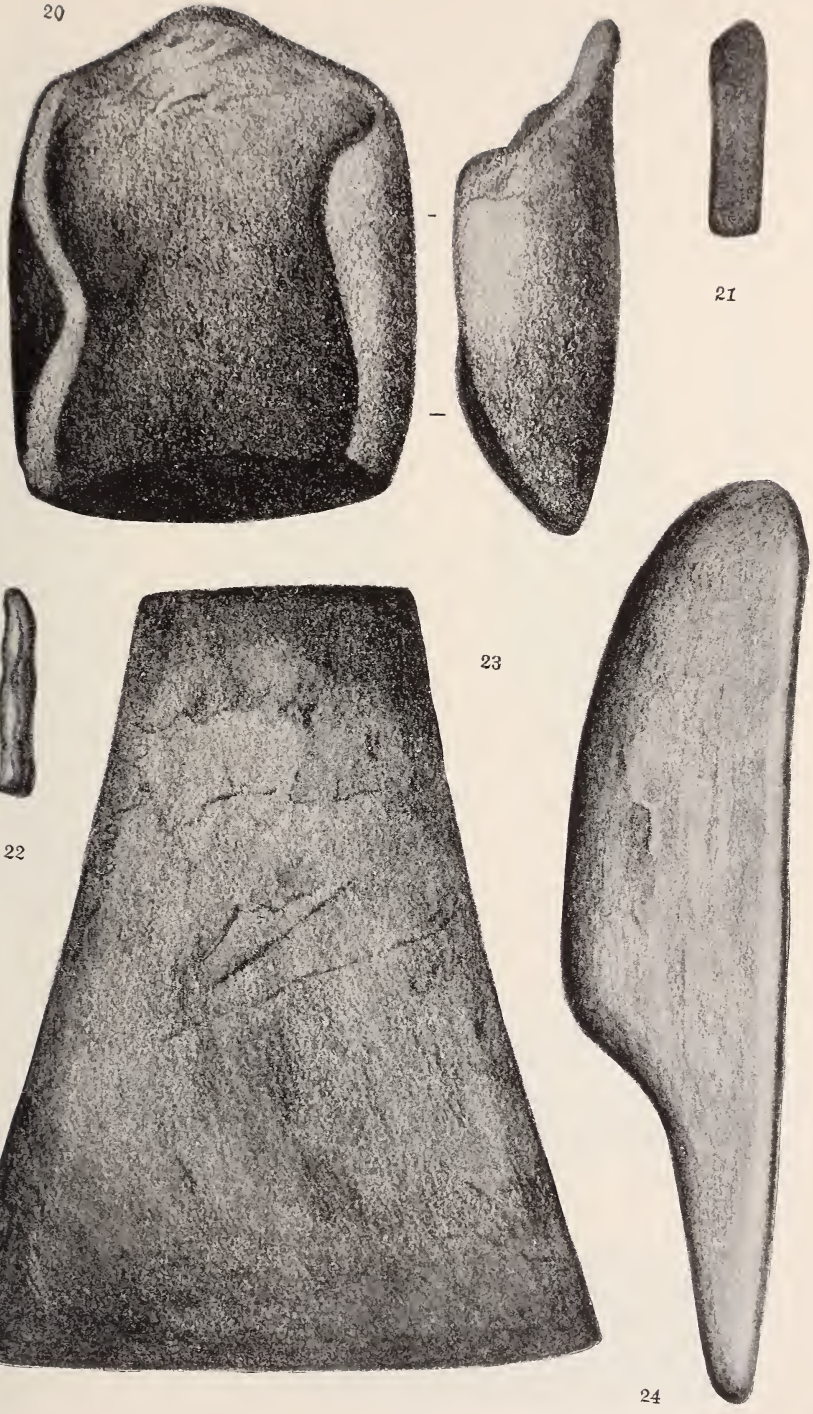
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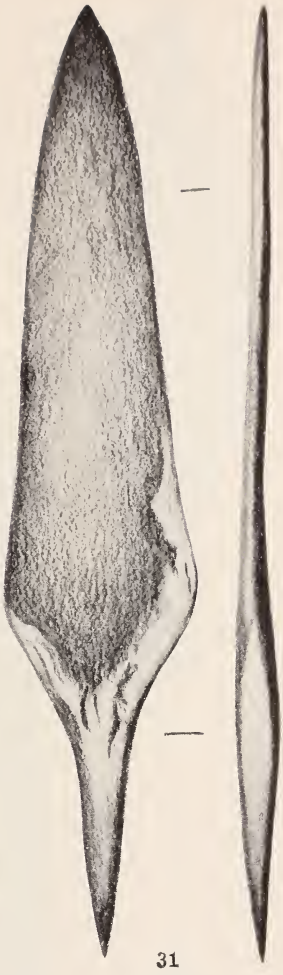

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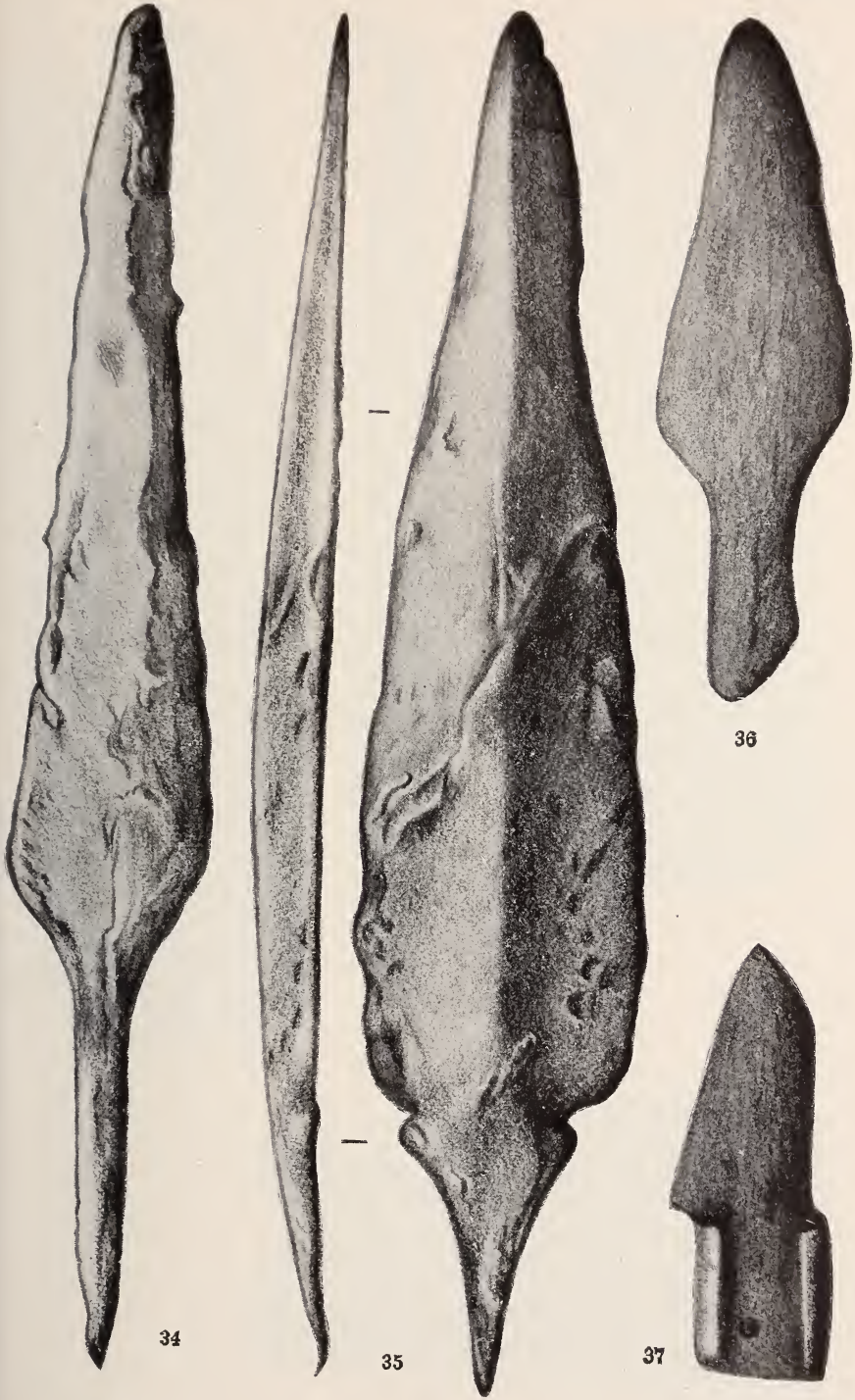

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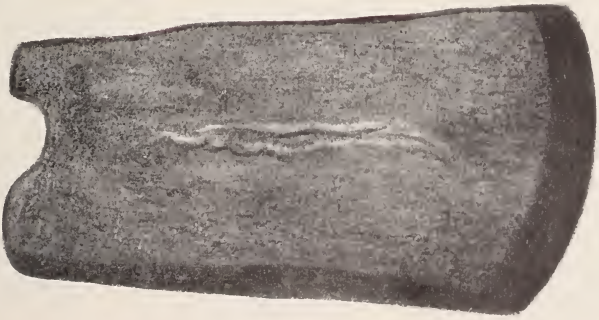

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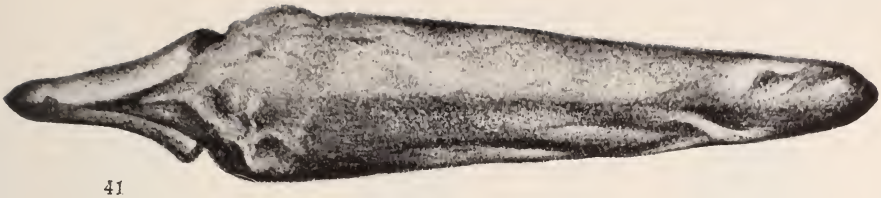

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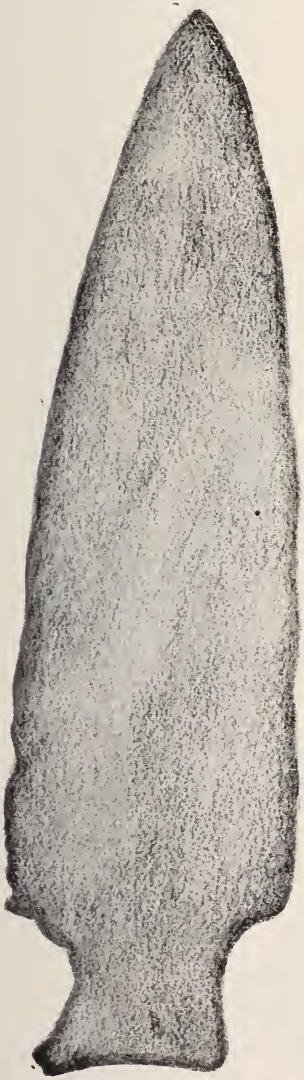

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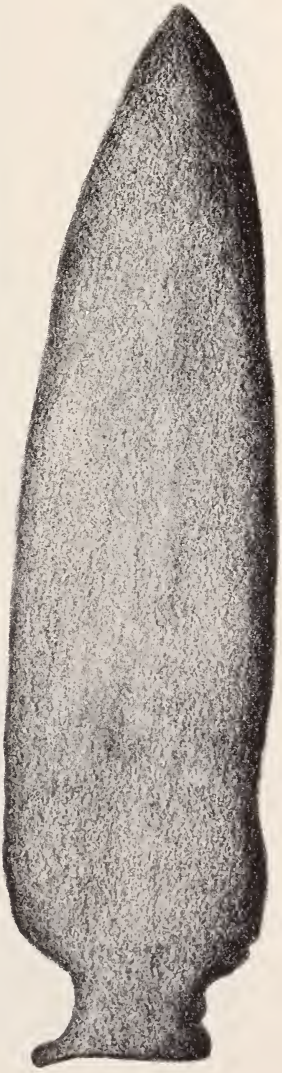

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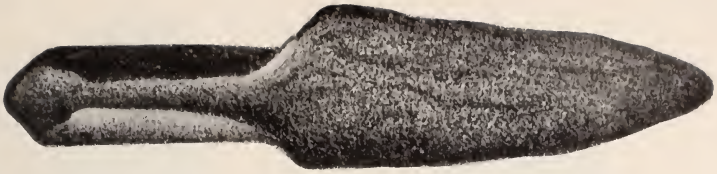

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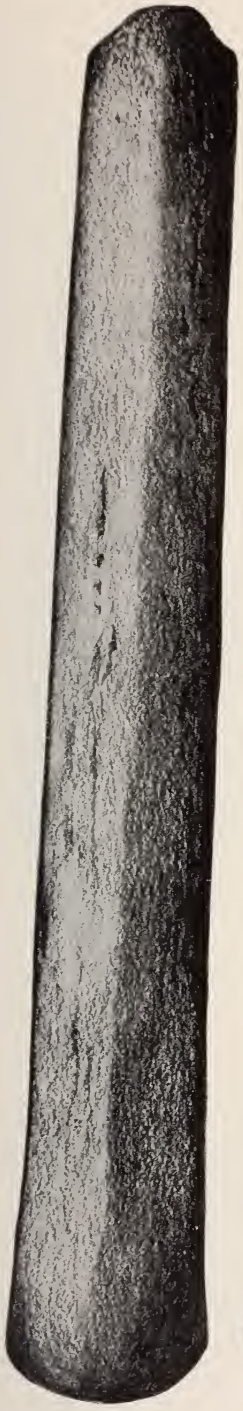

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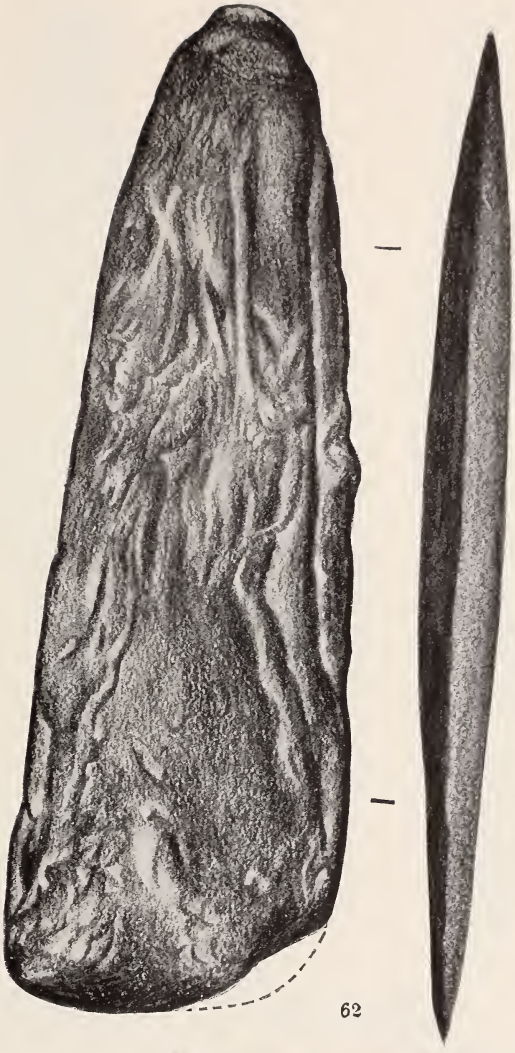

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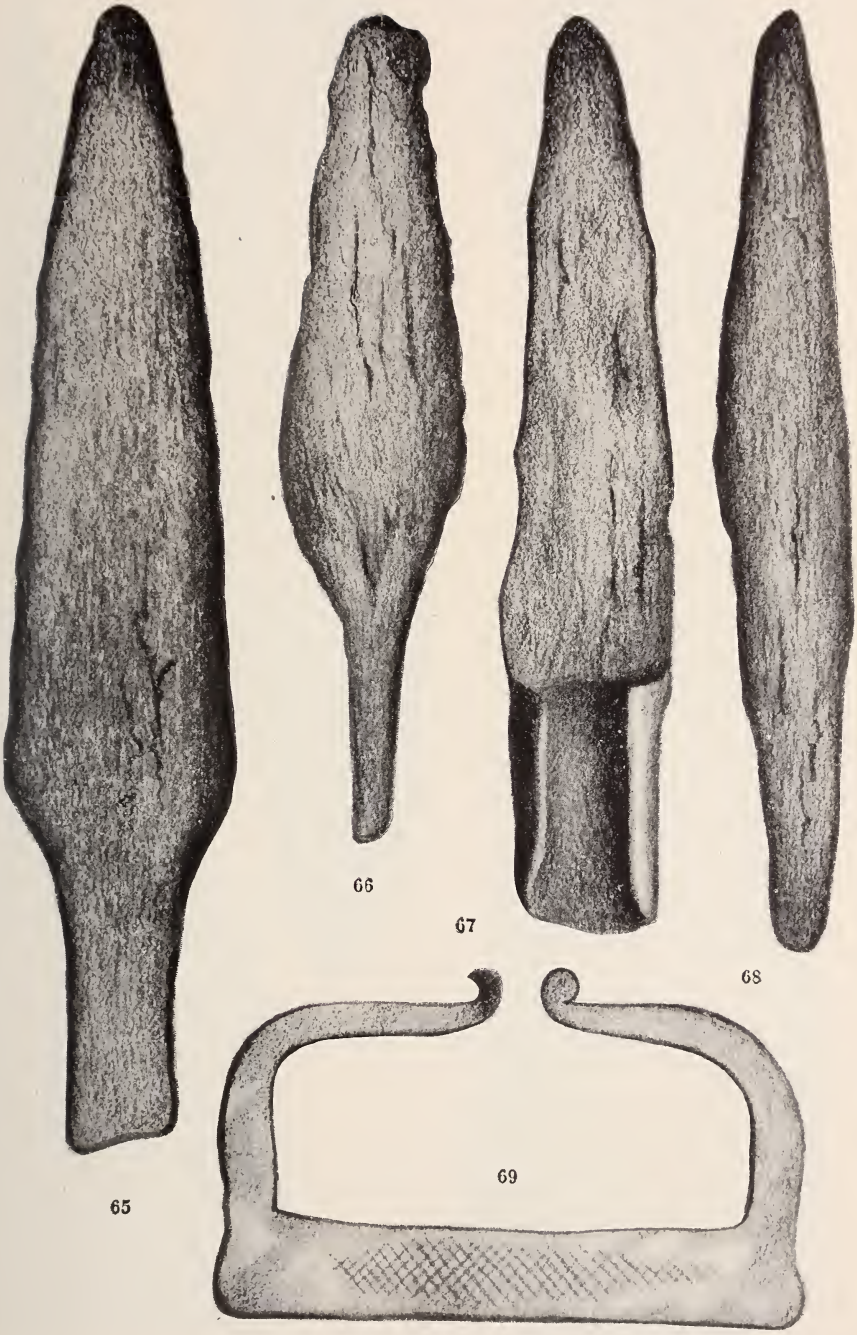

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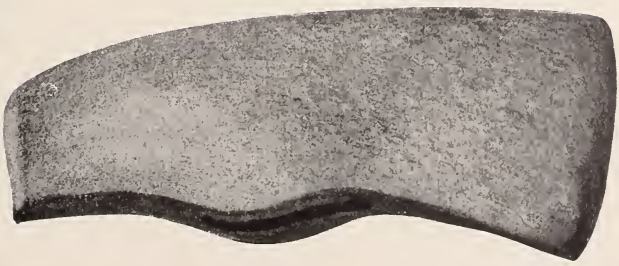

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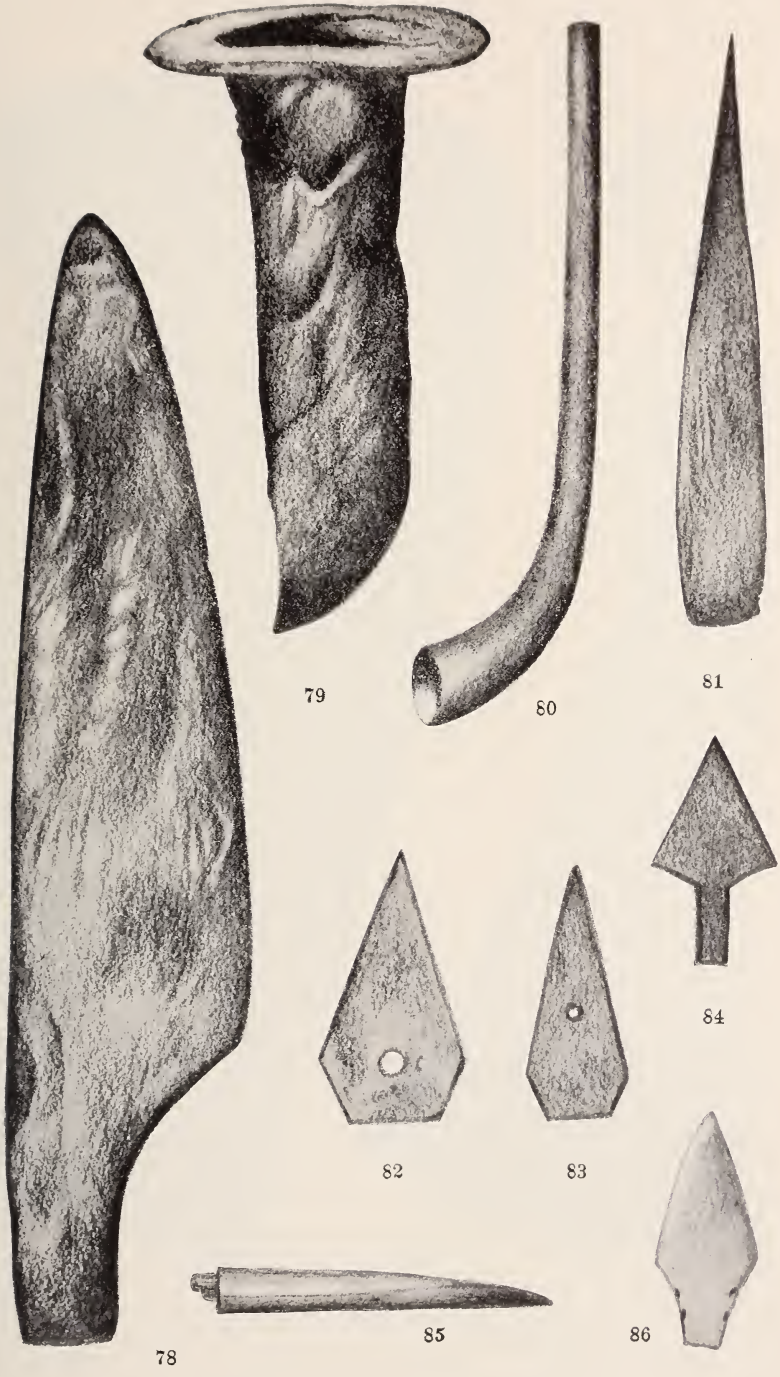
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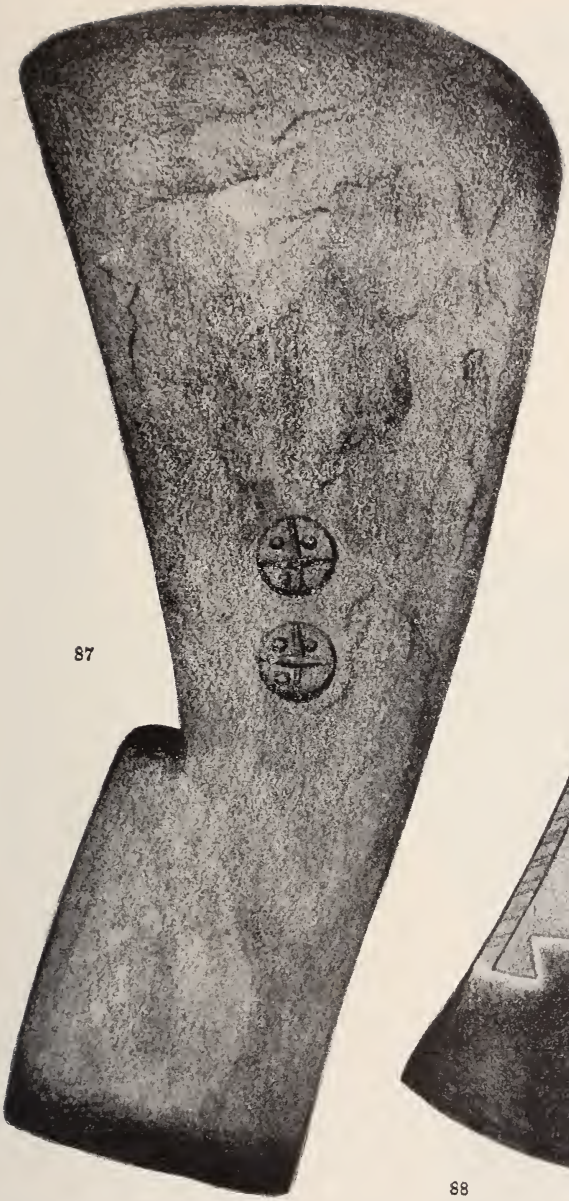

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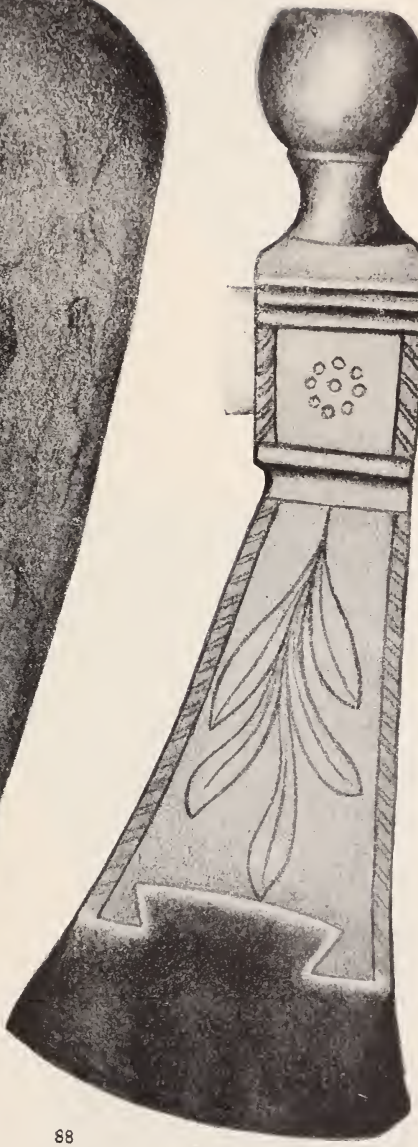

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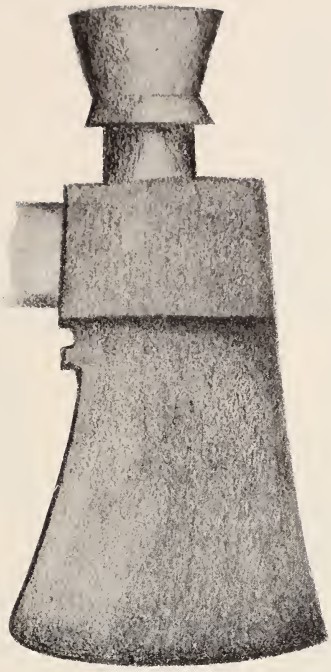

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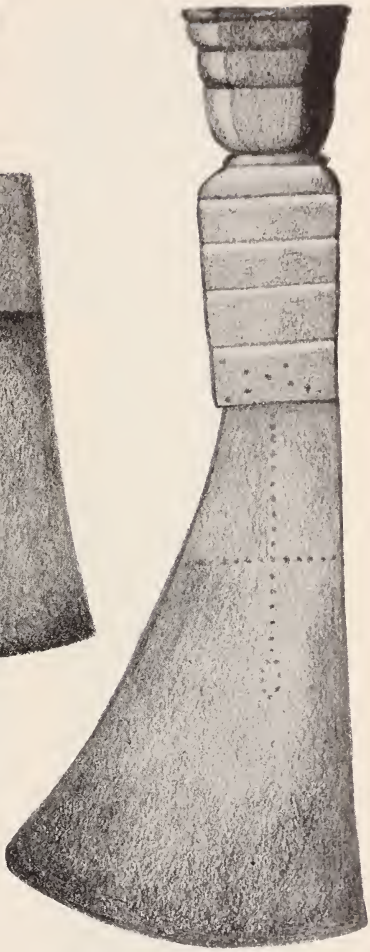

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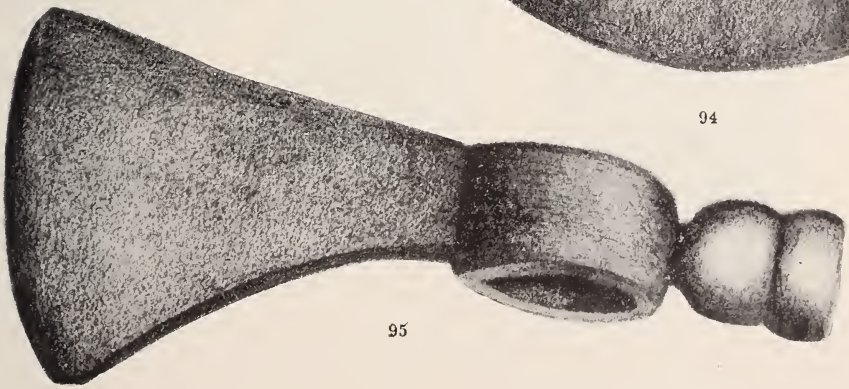

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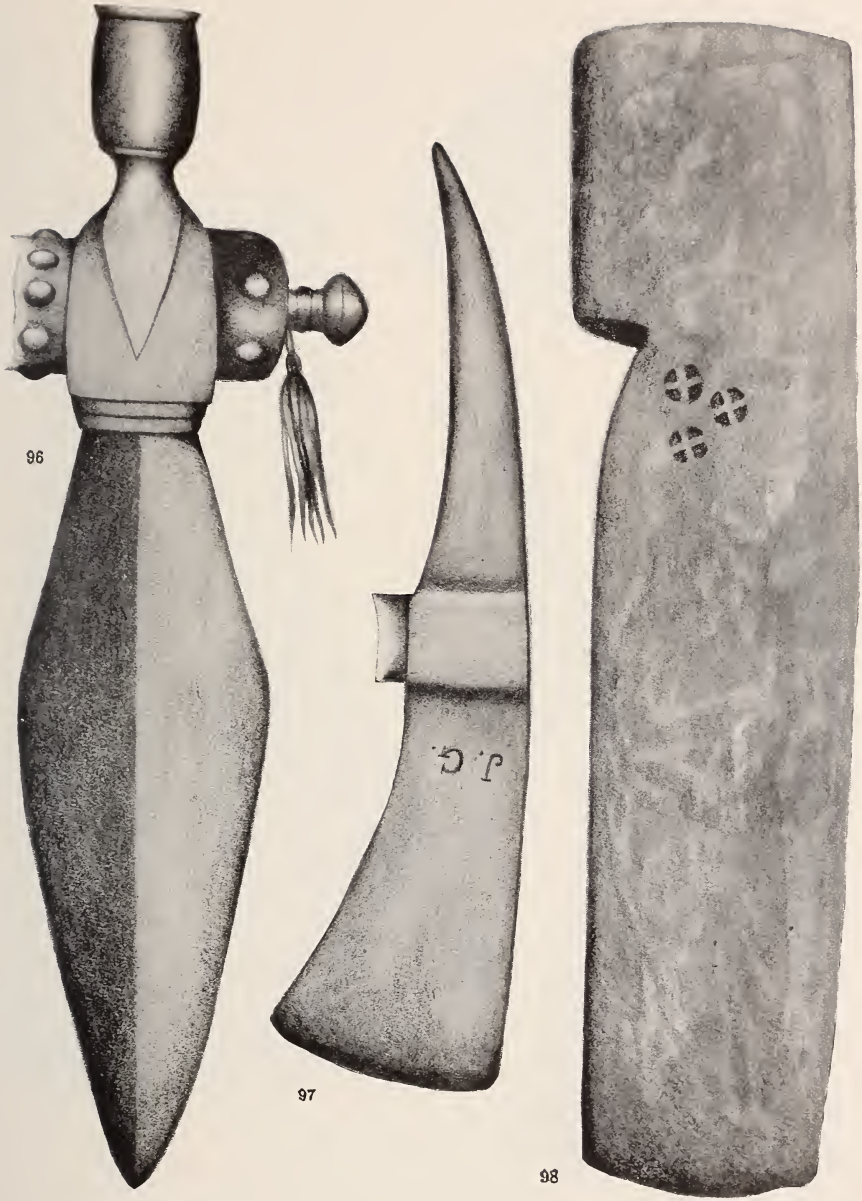
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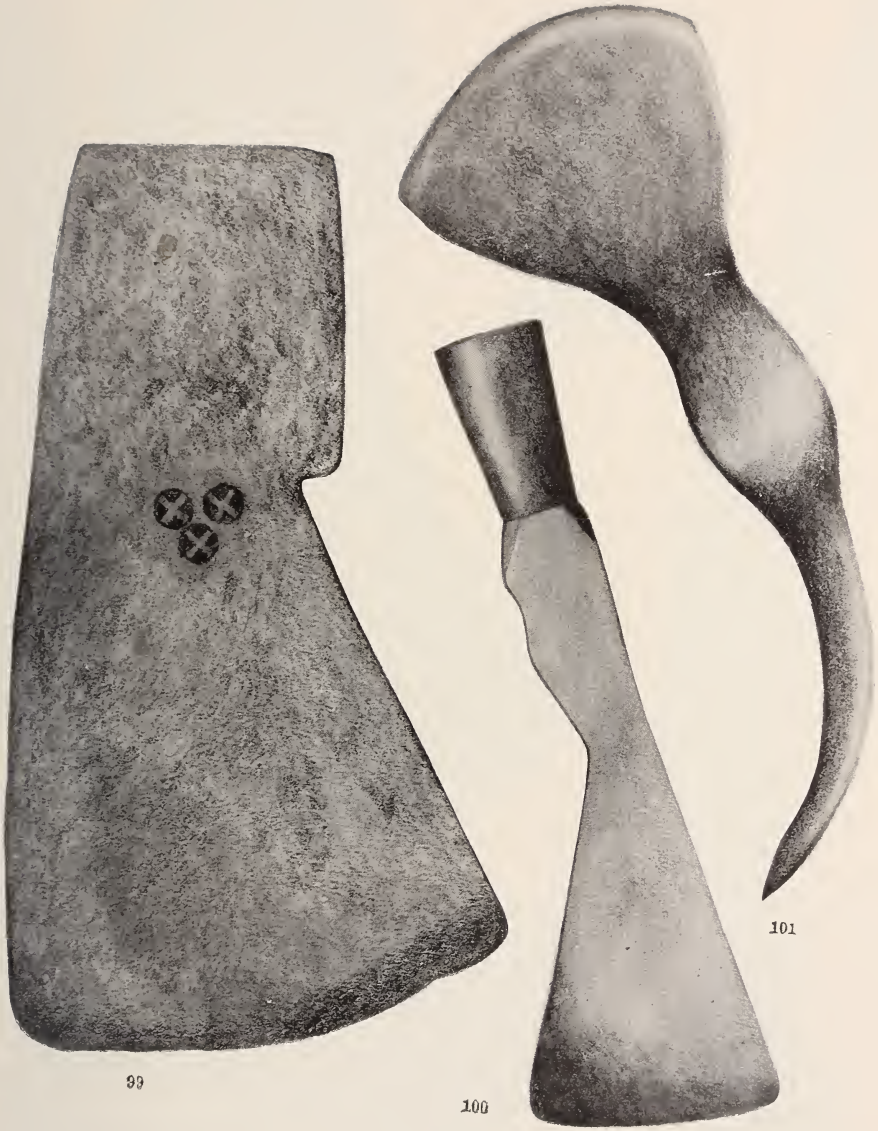

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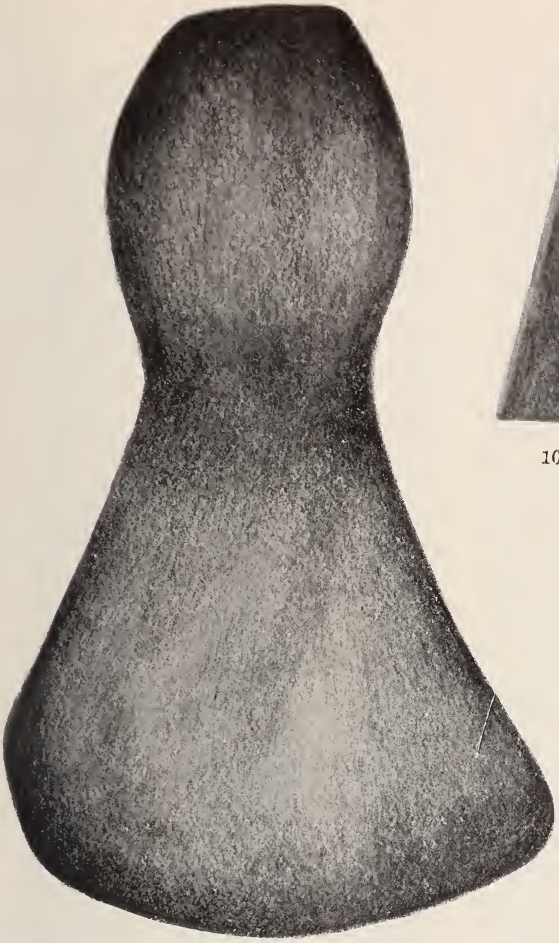

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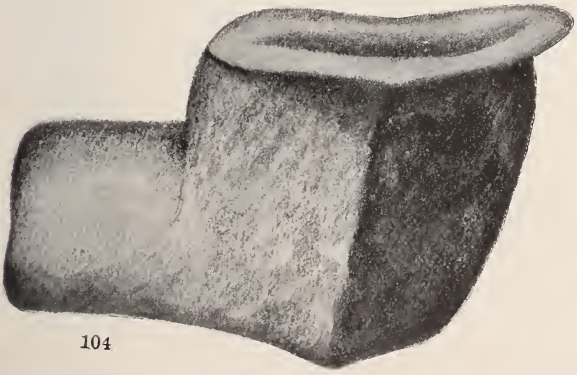

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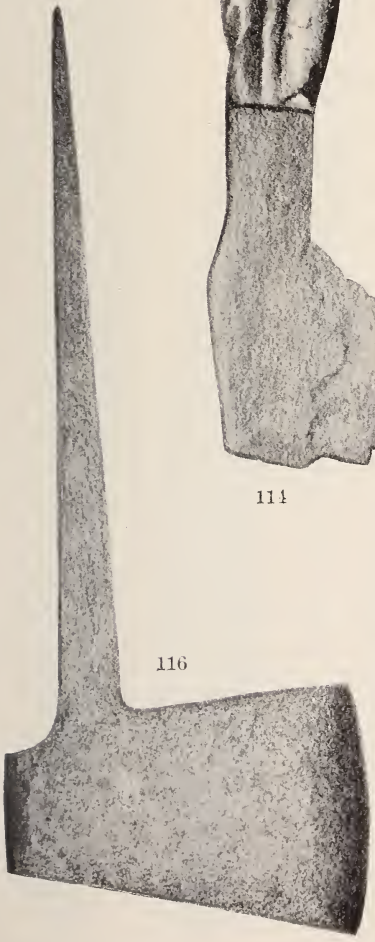

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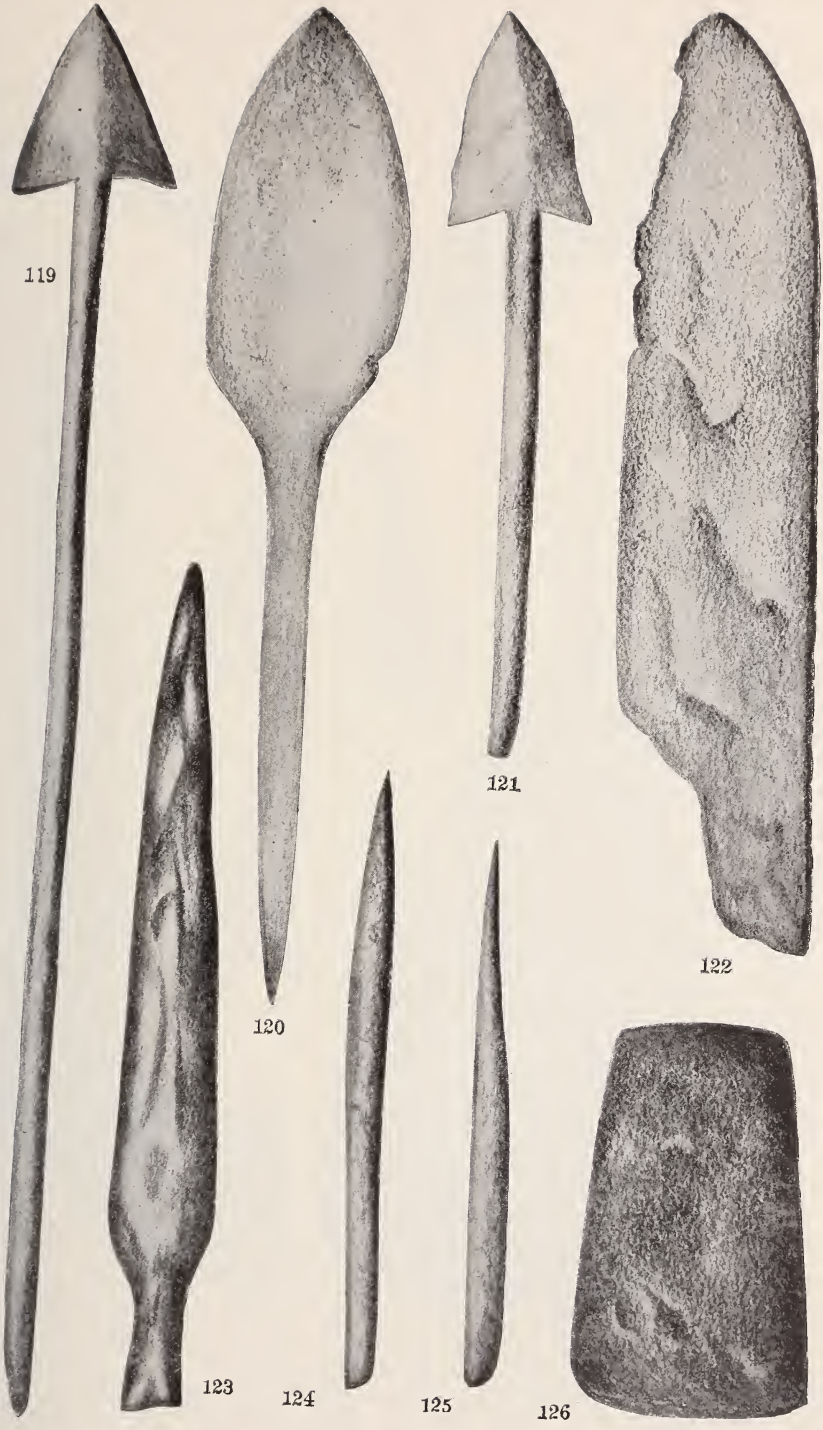
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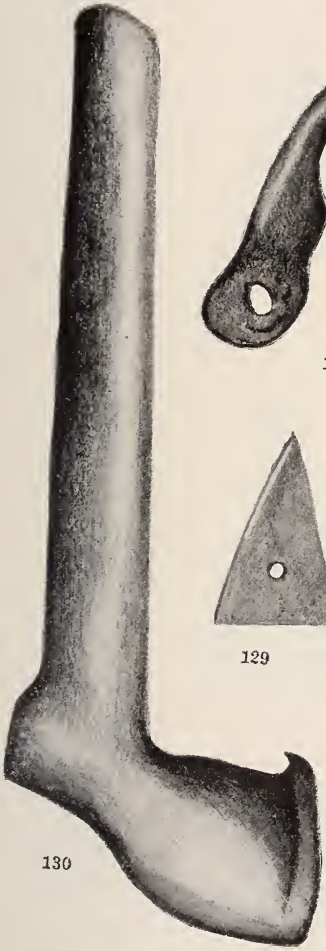

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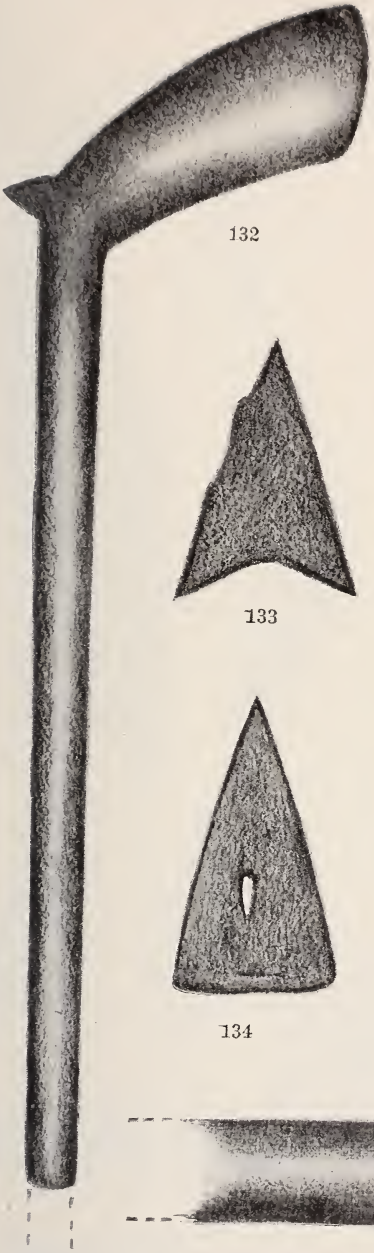

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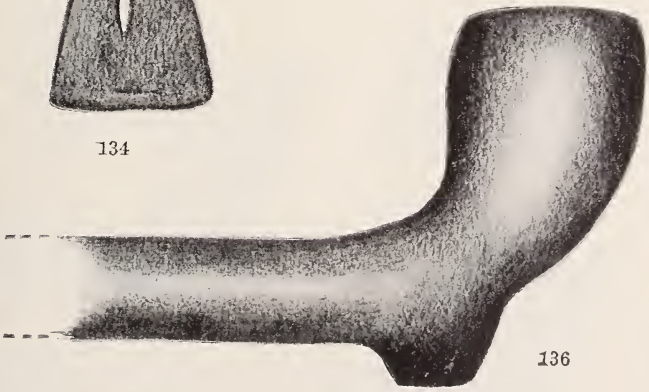

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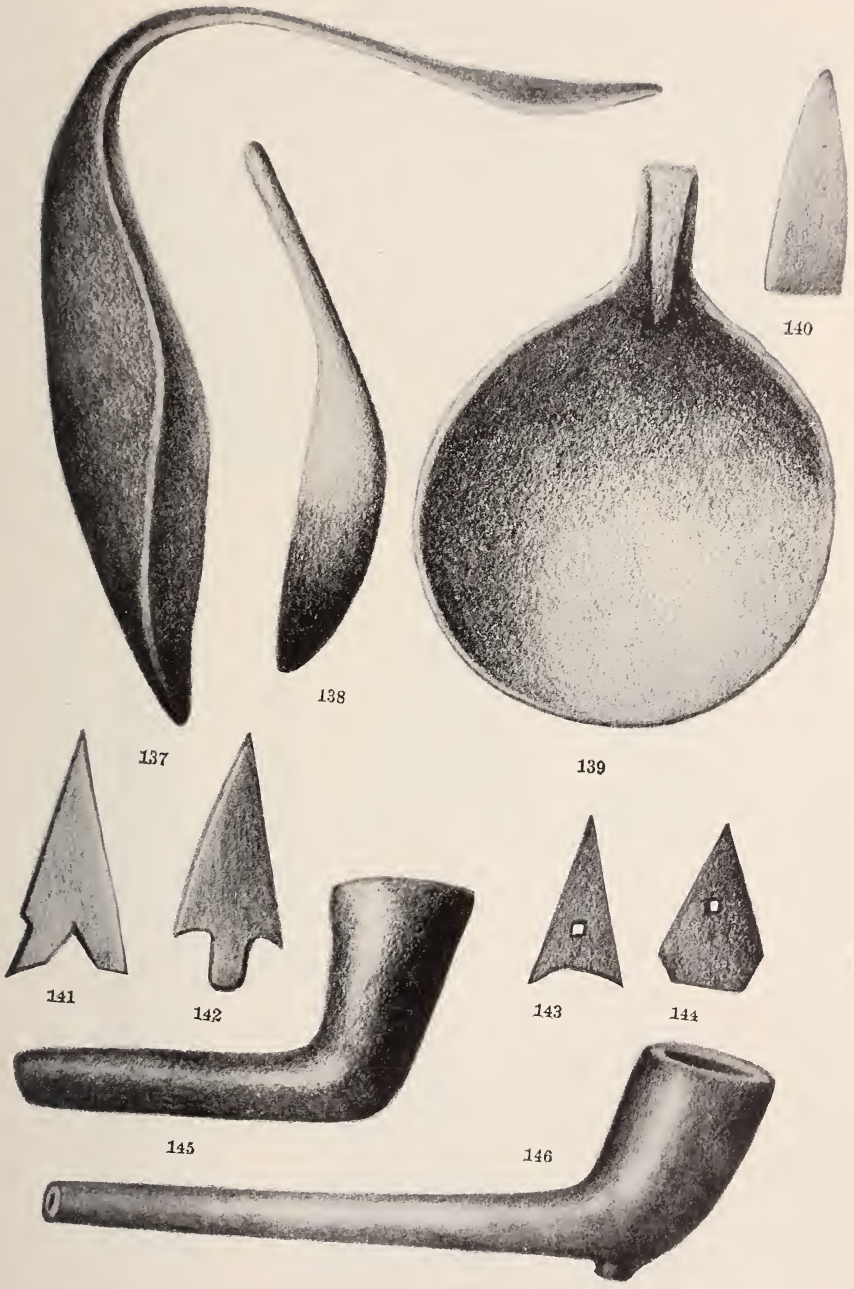
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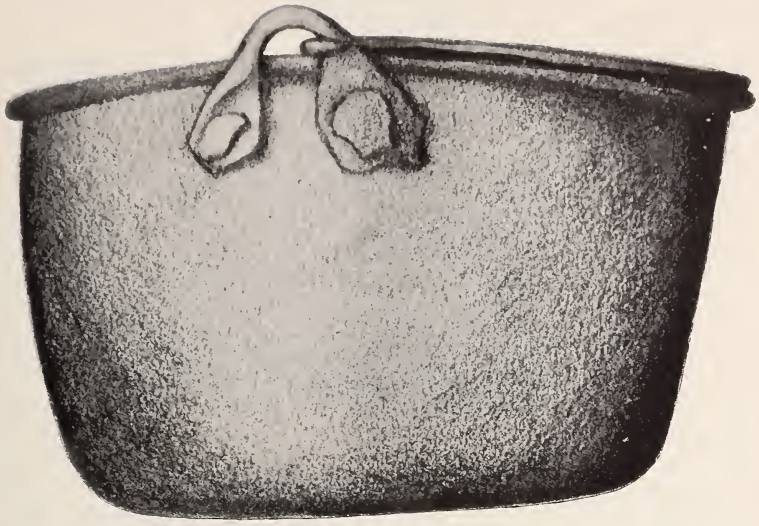

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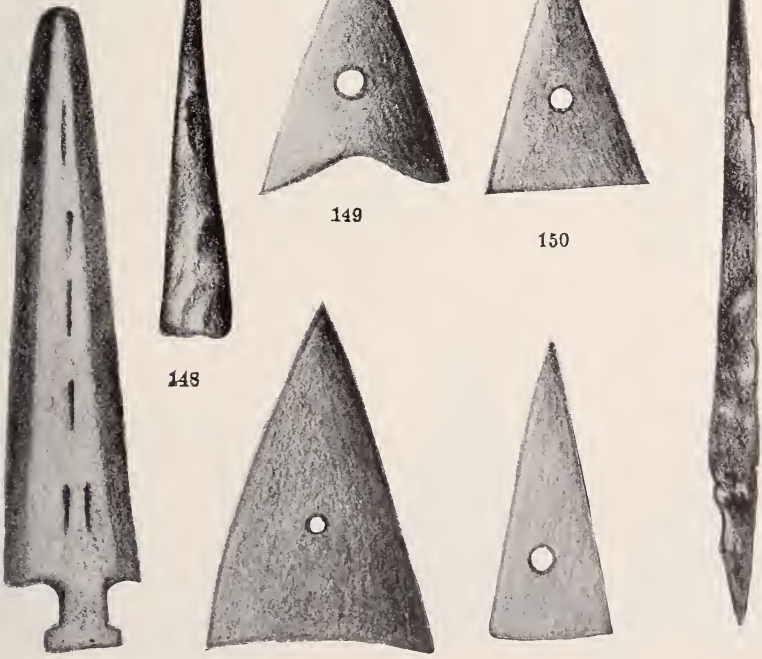

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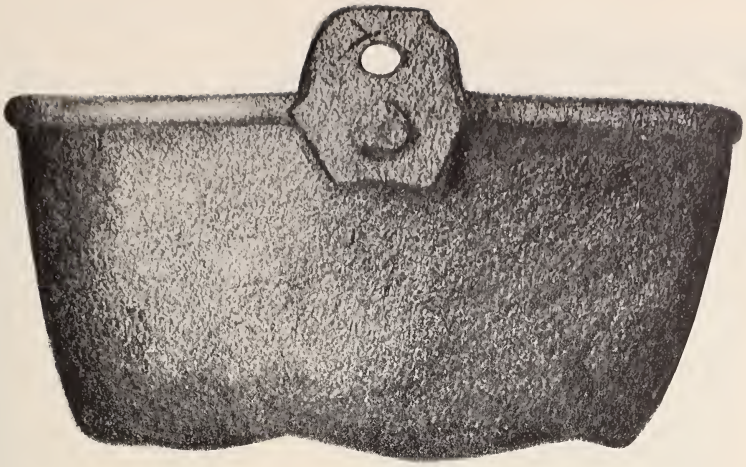

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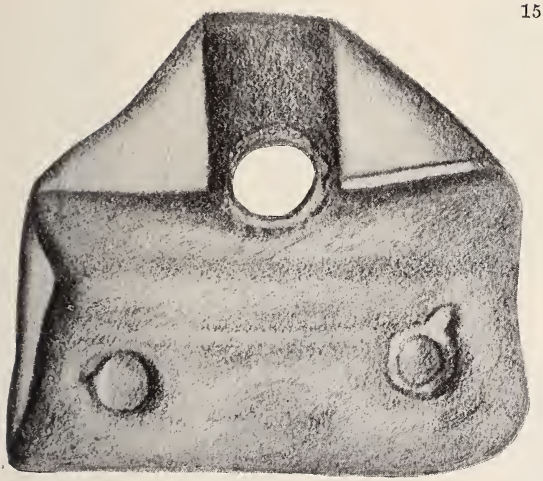

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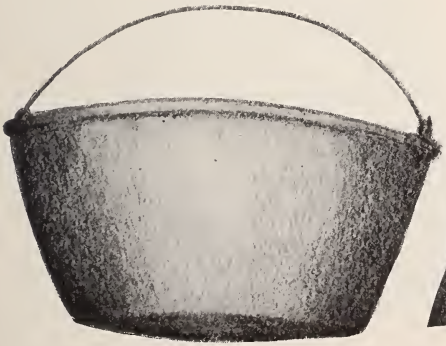

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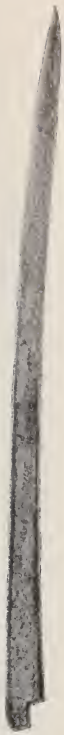

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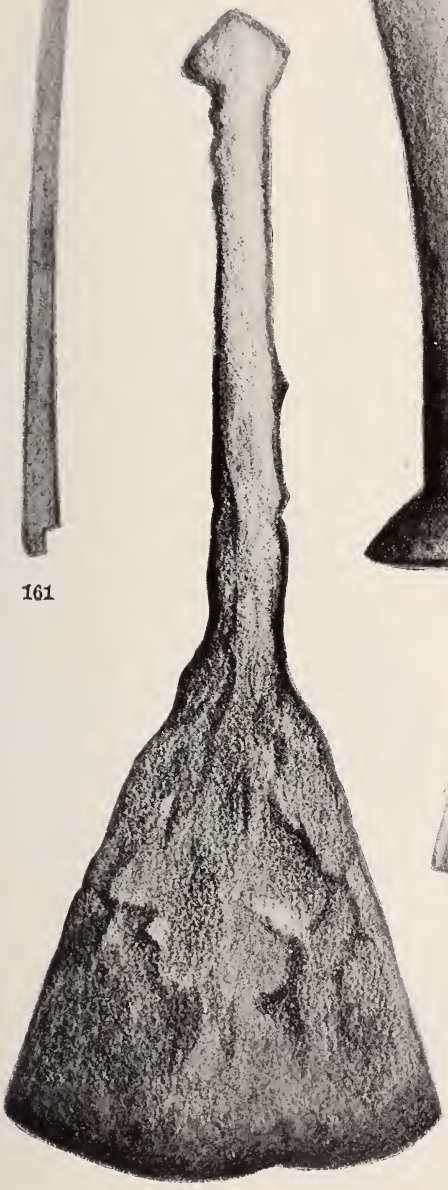

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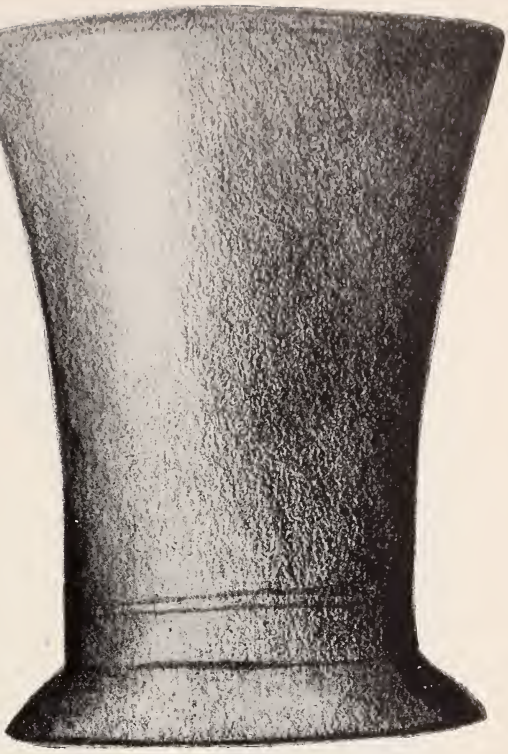

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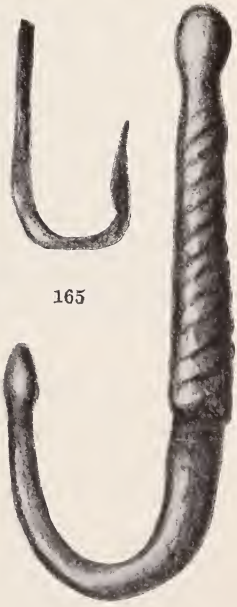

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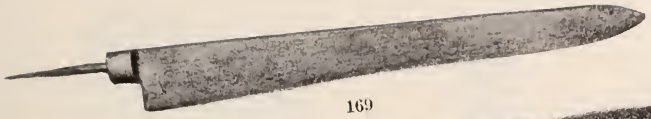

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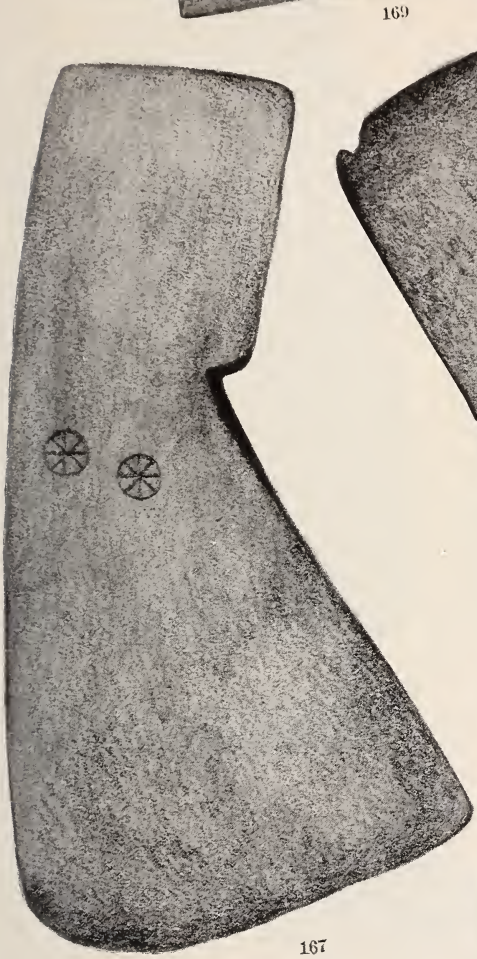

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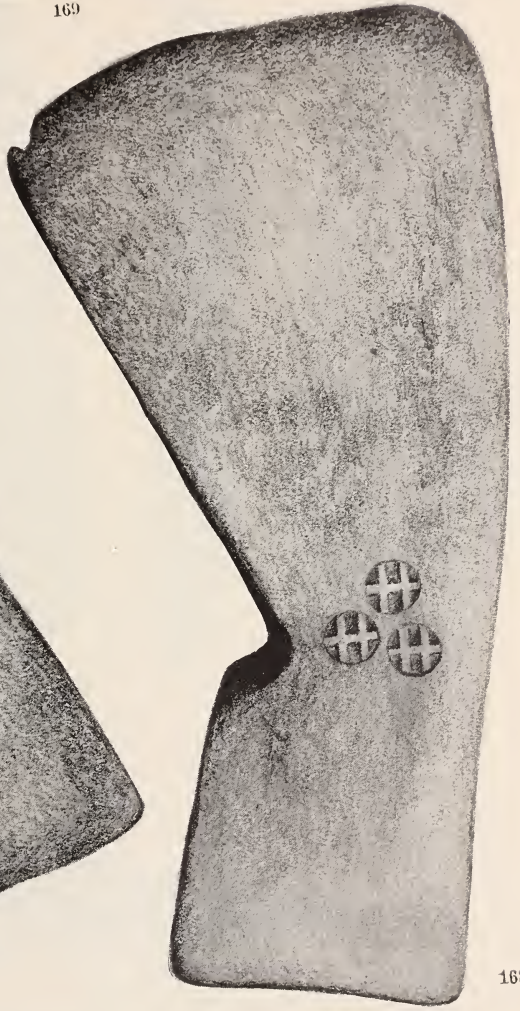

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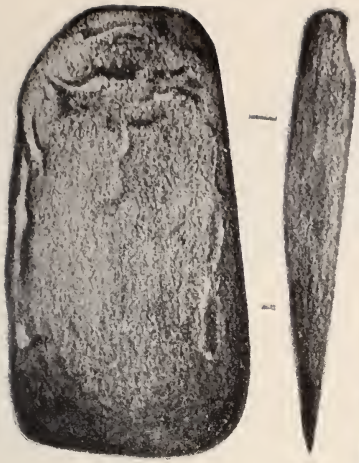

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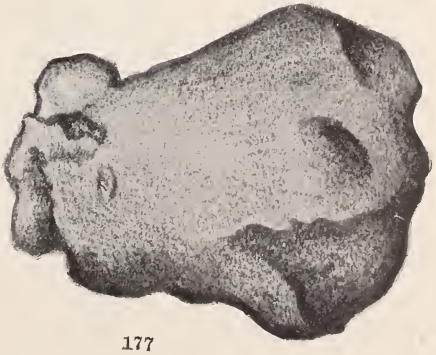

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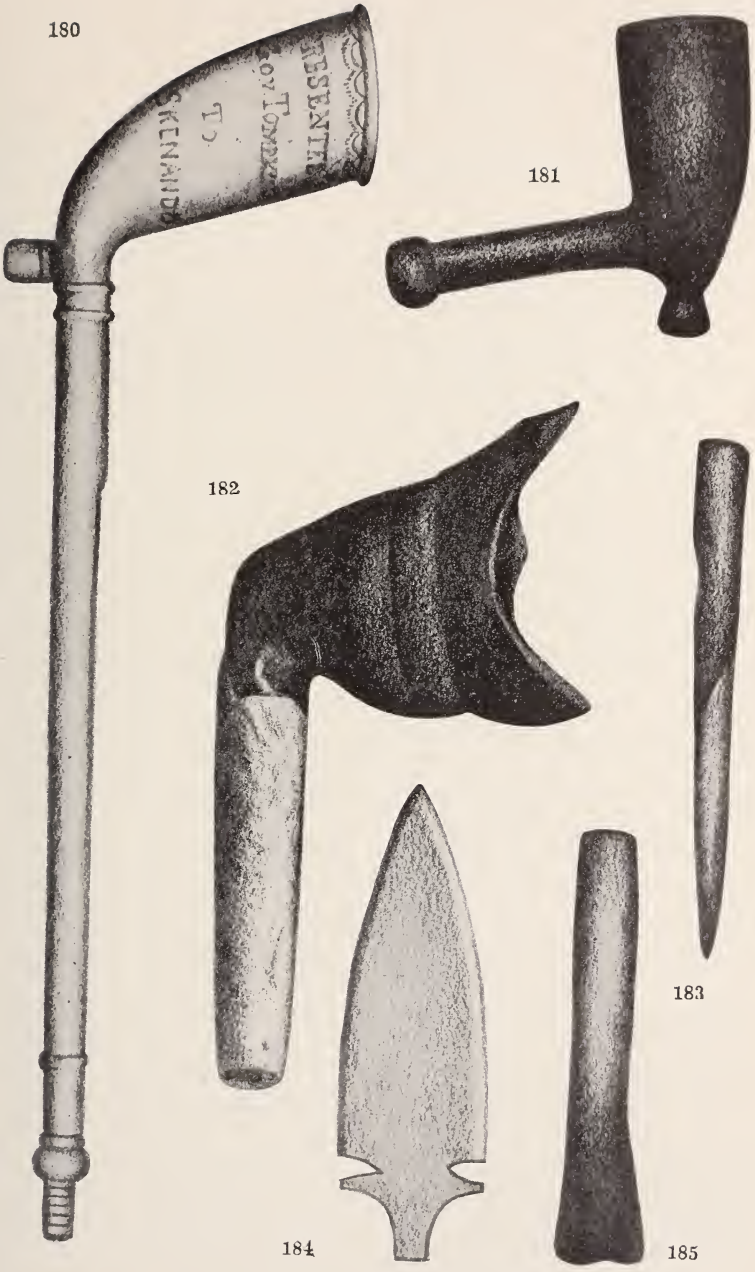
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